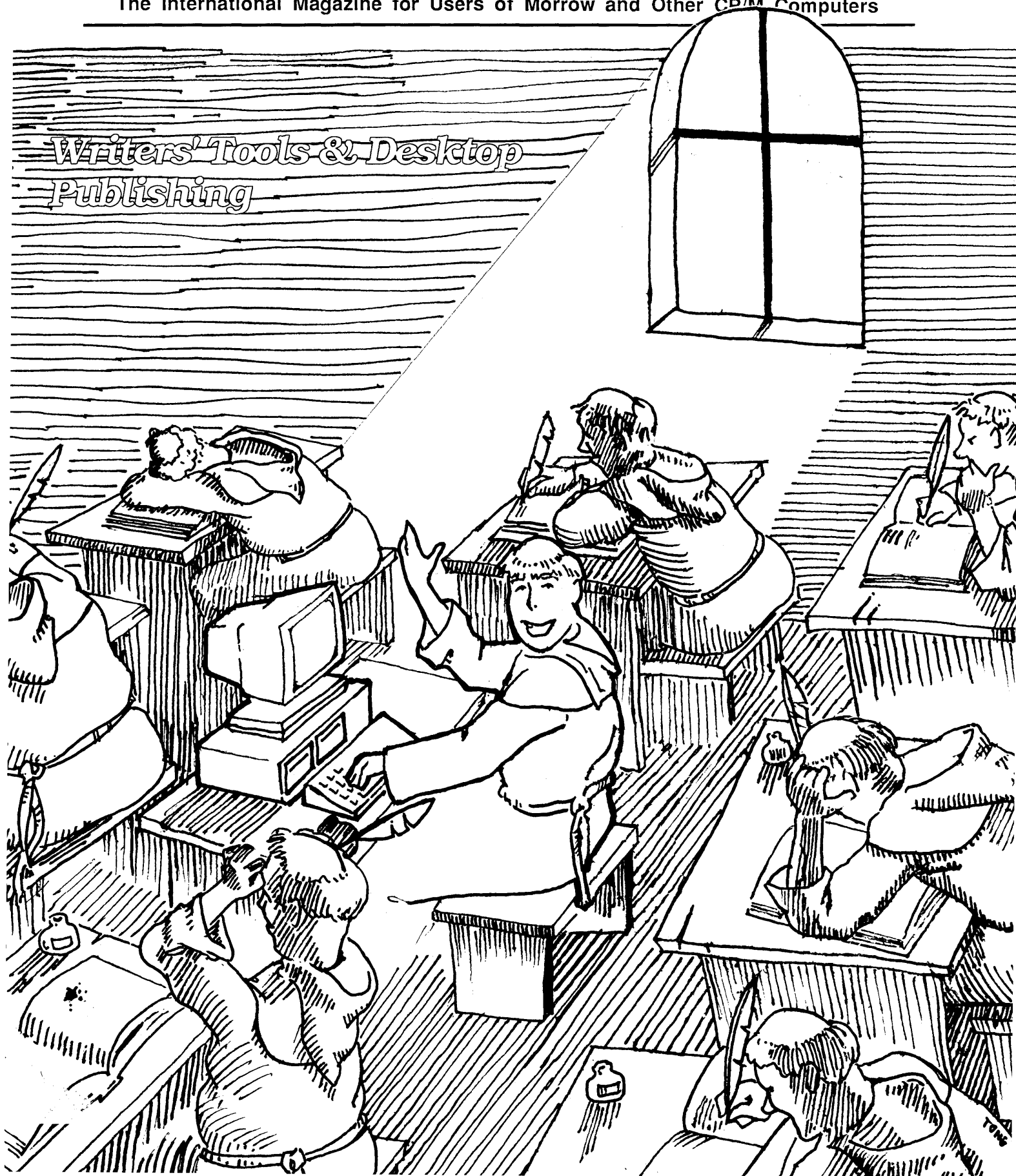


MORROW OWNERS' REVIEW

The International Magazine for Users of Morrow and Other CP/M Computers

*Writers' Tools & Desktop
Publishing*



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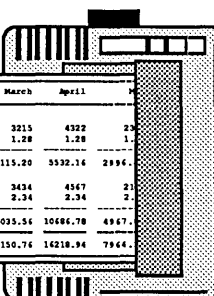
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Editorial

The Bulletin Board Culture Is Growing Up

Ten years ago, when CP/M software was first being distributed, only a few personal computer buffs communicated by electronic bulletin board systems, or BBSs. Among the pioneers in this field was Ward Christensen of Chicago. Today, everybody has gotten into the act. Churches, colleges, businesses, peace groups, dating services, even sheriff's deputies are sharing messages and public-domain software by computer, using modems, phone lines and a central computer that serves as a bulletin board.

Now that BBSs are firmly established and *MOR's* own system is in full swing, we think it's time we took a look at these new global villages.

I've always been fascinated by how dedicated and helpful the people are who volunteer their time to run these BBSs. Known as SYSOPs, or system operators, they are the ones in charge. They check you out if you want to join, and they keep the system running. Of all the BBS callers, SYSOPs receive the highest number of messages, be these pleas for access or calls for help. Many SYSOPs spend an hour a day monitoring the system, feeding it with fresh software and cleaning it up. Why do they do it? Is it that same strain of love of communications that infects ham radio amateurs? Is it the satisfaction of providing a community service? Of being needed?

At the other end of the phone lines are the callers who enter the system to leave messages for other BBS villagers, to see what everybody else is talking about and to milk some of the fresh new public domain software down the lines. This latter activity is called "downloading." Some people log in, take a quick look around and get out. Others stay on the line for more than an hour, reading all the public messages, composing responses on-line, sniffing through all the user areas for new software and downloading files until satiated. A few people distinguish themselves as true helpers, giving ample advice to, and going out of their way for, any other caller with the slightest problem. Helping each other is what many BBSs are about and many BBS callers, to quote Stewart Brand, behave like angels. How long do these global villages stay that idyllic?

Any powerful expression of creative energy, no matter how idealistic, will threaten someone. Case in point is the legal battle a SYSOP from the Los Angeles area had to wield against certain authorities who claimed that a stolen credit card number had been posted on his BBS. Even though the SYSOP claimed to have no knowledge of the alleged scam, the authorities promptly confiscated his BBS

equipment and refused to return it until the SYSOP could prove himself innocent. But would the corner food store be closed if someone would post the same credit card number on their bulletin board? From the court proceedings it appeared that the prosecutors were mainly interested in intimidating the BBS world, which is a "people's" network of communication that, run neither by government nor corporation, is a bit hard to control. It reminds one of the Kremlin's fear of the public availability of copy machines and personal computers. Grassroots creativity makes many in authority uncomfortable. Luckily, in this country, most institutions of power learn to live with this discomfort.

Any worthwhile creation will attract a few who want to destroy it. With the BBSs these are the many "twit-hackers," who try to break through the often flimsy security of a bulletin board to see if they can pull what they consider a satisfying prank. Sometimes they wipe out all the files on the disk of the BBS. This has happened often enough to cause SYSOPs to be concerned about granting access and BBS software designers to build in layer upon layer of security measures. It explains the often quite strong response from a SYSOP to someone who openly tries to trade commercial software or leaves confidential phone or credit card numbers on the BBS. If a BBS system crashes for no apparent reason, the SYSOP's first thought likely is: "Was this caused by a break-and-enter caller from the outside?"

It may be that our BBSs, which started out as such idealistic global villages, have been around long enough to attract the social diseases that we know so well from our more familiar and longstanding institutions. There will always be those in authority who fear free creative expression because it seems uncontrollable, just as there will always be brats who enjoy throwing rocks through windows.

To deal with these increasing problems, the Public Remote Access Computer Standards Association (PRACSA) was founded by a group of concerned SYSOPs. Among PRACSA's stated goals are to "re-establish remote computer users and operators as productive and valuable citizens, to counter negative and inflammatory reports by uninformed media, and to garner the support of law-enforcement agencies." To these ends they promote good operating etiquette by users and SYSOPs and further the liaison between common carrier providers, government agencies, and remote access systems (BBSs). A most appropriate endeavor worthy of support by all of us. ■



Letters to the Editor

Enhance Your Morrow or Go Blue

Dear Editor:

Your editorial in the last June/July issue doesn't really answer the question it poses. The real question in a world of falling prices for computers (read: MS-DOS computers) is: "Given the fact that complete PC-clone systems can be put together for a thousand dollars, should I spend anything near that amount to 'enhance' my Morrow?"

In other words, if WestWind has a "special" price of \$995 for a 5-MB hard disk, RAMdisk, and interface—as they show in their June/July ad—why wouldn't I want to spend the same grand and buy a whole new system? Loyalty is one thing; foolishness is another. In the real world, this kind of "special" is no special.

Tim Evans
Baltimore, MD

MOR's New Look and Support

Dear Editor:

Well done, MOR! Now your typography and graphics match your excellent editorial content. The new look is a great improvement and so is the direction you are headed. Offering reader support beyond the magazine—quality products at a discount price—should pay off for everyone concerned with MOR and Morrow computers. That kind of support is desperately needed. Here is a case in point:

I recently received a long-distance call as a result of your new subscriber campaign and my quote evidently appearing in your promotional material. The person calling was asking where she could go to learn

how to use her MD2 system. Seems she gave up using it when she no longer had dealer support. (The old "door-stop syndrome," I presume.) She couldn't get enough cash for the system to make selling an option so wondered if MOR would really help her. I gave her all the appropriate assurances based on my own experiences with the magazine. She seemed very relieved. Consequently, I expect you already have received her subscription check.

I am pleased to see you offering ZCPR3 from Echelon, Inc. Having used ZCPR3 on my other computer for the past six months, I have become an enthusiastic, though novice, user. There's a lot to learn with the system, but it's far more useful than CP/M from the very beginning. It will go into my MD3, just upgraded from an MD2, thanks to Silicon Valley surplus and MOR.

James E. Bottom
Salem, OR

MD3 with Tandon Drives Needs Fan

Dear Editor:

Thanks for offering to help me with my MD2-to-MD3 conversion problems. Preston Burner, of our Washington Morrow Users Group rewrote the BIOS for my CP/M 2.2 ROM Rev. 1.3 Morrow, which is now a fully functioning double-sided machine.

One suggestion that I would want to pass on is that, at least in my case, a fan was necessary. The new Tandon-100 disk drives would heat up very quickly during intensive use. Soon I was getting nothing but disk error messages.

But the installation of a fan has

made the machine a joy to operate; the noise has, of course, increased compared to the no-fan condition, but it is not too intrusive.

I am still pleased to say that as a Morrow computer owner of over 3-1/2 years, I do not regret my purchase, the tremendous learning experience, and the virtually trouble-free operation of my machine. It has done and continues to do what I originally bought the machine for—word processing and spreadsheets—extremely well for my purposes, plus the great new things I have learned, such as data base operations and modem communications.

Irv Garfield,
Alexandria, VA

[The added fan is quite an issue with some people. I know of one case where a user preferred to use the mostly silent MD3 over the faster but noisier MD11. —Ed.]

The Newer the Manual, the Better

Dear Editor:

Recently I found that the newer manual, entitled *Hard Disk Micro Decision, Models MD5, MD11, MD16 & MD34* is quite different from the older manual, *MD11 Hard Disk Micro Decision User's Guide*.

The newer manual (available from MOR, product #607) is loaded with useful information left out of the older manual. If MD11 owners don't have the new manual, they should get one if they are installing the Hard Disk ROM Upgrade and software, MOR product #902. Pass the word.

Douglas Baker
Wilton, CA

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PropStar gives type-set quality true proportional spaced printing from ordinary NewWord and WordStar document files. Prints on daisy-wheel printers with ps type-wheels (and certain matrix & laser printers), including Diablo, Qume, NEC, Brother, C-Itoh, Juki, Silver-Reed, Canon, Fujitsu & others.

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Important Announcements

New Morrow Bulletin Boards

Several new Electronic Bulletin Board Systems (BBSs) have come alive. The ones listed below are all Morrow oriented:

Morrow Owners' Review	415/654-3798
Silicon Valley Surplus	415/261-4513
Oklahoma RCP/M	405/848-5317

The *Morrow Owners' Review* PBBS can be called to place mail orders, upload articles, notify *MOR* of changes of address and leave messages. For more on the *MOR* PBBS, see article in this issue.

Discount for 10-MB Hard Disk for MD3

If you order the ZCPR3 package from *MOR* (see "Important Announcements" last issue), then you are entitled to a discount on the Mini-Winnie 10-MB hard disk system by Advanced Concepts Engineering & Consulting. This system can be added onto your MD3. For more information on the Mini-Winnie, read the article by Rick Charnes and the review by Ted Silveira in this issue, or call Tony Nicotra at Advanced Concepts (305/482-7302).

The Mini-Winnie will not be sold by *MOR*, but by Advanced Concepts. If you want to order a *MOR* ZCPR3 kit and also wish to buy the Mini-Winnie, then you should indicate this fact clearly on your ZCPR3 order and we will add your name to the Mini-Winnie discount list. If you have already ordered the ZCPR3 kit and now want to buy a Mini-Winnie, please let us know and we will add your name to the list. In both cases, we will notify you when the list is submitted, at which time you should get in touch with Advanced Concepts to place your Mini-Winnie discount order.

The amount of the discount will depend on the number of *MOR* ZCPR3-related orders, and the price will depend on whether the hard disk can be made to fit inside the MD3 or will need an outside enclosure and separate power supply. Tony Nicotra estimates that with at least 20 orders, the discount could start at 15 percent and grow larger as the order list grows longer.

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New Software

CP/M really is still alive. My columns have apparently gotten the attention of people who still know what CP/M is. I'm finding new stuff almost every week.

Not too long ago I was ecstatic when the mail came and it included a package from Spectre Technologies Inc. (a *MOR* advertiser).

I was working on a technical presentation that included lots of large tables and charts that just wouldn't fit conveniently on my Okidata 92 printer, even in the compressed print mode. When I opened the envelope, I found a letter from Mr. David Grenewetzki of Spectre and a copy of TWIST & SHOUT!

TWIST & SHOUT! is fantastic for anybody using a spreadsheet, or for anyone who prepares tables that are wider than the usual 80 columns.

TWIST & SHOUT sells for \$34.95 and is actually two programs.

The TWIST part of the program is what I really love. It turns your wide document sideways and prints it lengthwise on the paper, thus saving all the cutting and taping. I've used it very successfully with WordStar,

Send your questions and comments to Ken Grymala at P.O. Box 2540, Manassas, VA 22110.

CP/M Alive!

by Ken Grymala

NewWord, and MultiPlan.

The SHOUT part of the program is for making signs and banners. It, too, prints sideways. The number of lines in your message automatically determines the height and position of each line's letters.

The program only requires a dot-matrix printer and a computer running CP/M (e.g., MD1, -2, -3) or CP/M Plus (e.g., MD5, -11, -16, -32).

What is almost as good as the program is that Spectre is continuing to develop CP/M products. Mr. Grenewetzki informs me that "At Spectre, we're still developing CP/M software and we'll be releasing a couple of new goodies in the next few months."

For more information on Spectre products, refer to their advertisements in *MOR* and write to them for information at 22458 Ventura Blvd, Suite E, Woodland Hills, CA 91364. They

have a new 800 number for orders: 800/628-2828, operator 918.

Desktop Publishing

Software Offer

Just as I started to write this column, I received special offer information for *Morrow* users from Computer Editype Systems, 509 Cathedral Parkway, 10A, New York, NY 10025, phone 800/251-2223.

They are (were) offering their MagicSeries programs to *Morrow* owners for 1/3 off through October 31, 1986.

The MagicSeries programs were reviewed in *MOR* Vol. 3, #2, p. 14, by Georgia Babladelis. These programs offer true proportional spacing with WordStar/NewWord files, special merging capabilities, and indexing. They supposedly also support laser printers.

Since this is the Writers' Tools & Desktop Publishing issue, and since I just received the promotional material on the deadline for this issue, I would hope that the people at Computer Editype Systems would have it in their hearts to continue the 1/3-off offer to *Morrow* owners who are reading this column. [At *MOR's* request, Computer Editype has agreed to extend this special offer through Jan. 31, 1987. —Ed.]

Quick Viewgraphs

As a technical consultant, I frequently have to prepare presentations that include viewgraphs.

For viewgraphs I use a program called PrintMaster by Unison World Inc., 2150 Shattuck Ave., Suite 902, Berkeley, CA 94704. PrintMaster was reviewed in *MOR* Vol. 3, #2, p. 19.

The program is intended for making signs, greeting cards, letterhead, calendars, and banners. But it is really great for making viewgraphs.

PrintMaster includes eight different fonts; and when the "sign" option is used, the letters may be printed large or small. The large letters are twice as high as the small letters. The program takes care of vertical spacing, and the horizontal position is selectable from the menu.

After the viewgraph information is printed on paper, the paper is then run through a copy machine containing transparencies. The result is quick and good-looking viewgraphs.

PrintMaster will work under CP/M 2.2 or CP/M 3.0, but you must use it with a dot-matrix printer.

Layout

My work also requires that I frequently have to prepare drawings and various printed layouts that are intended for typesetting. As a consultant, much of my work is almost always needed yesterday or sooner. As a consequence, my work is frequently used in its interim state before it can be neatly typeset.

Nearly all dot-matrix printers have at least four different print sizes. Some printers, such as the Okidatas, have six different sizes and two different font styles. Additionally, you can set the vertical spacing between lines.

For instance, with my MD11, NewWord, and my Okidata 92 dot-matrix printer, I can produce print that contains 5, 6, 8.5, 10, 12, or 17 characters per inch. Figure 1 shows the

relationship of dot commands to characters per inch (CPI). Similarly, I can set the vertical spacing in lines per inch. Figure 2 shows the vertical spacing.

For layout, I print my material directly onto paper. If necessary, I will do a true cut-and-paste, where I might even include "half-tone" photographs and a columnar format. After running this through a copy machine, the output is generally very suitable for interim or final publication. It also makes the typesetter's job much easier.

Instant Stick-On Lettering

Before I started using a computer, I would dress up my drawings by using "dry transfer decals" (rub-on letters). Now I make my own stick-on letters with NewWord and my printers.

<u>Char. Per Inch</u>	<u>Dot Command</u>
5	.CW25
6	.CW20
8.5	.CW15
10	.CW12
12	.CW10
17	.CW6

Figure 1

Print Sizes Versus
Dot Commands

I do my drafting by hand, but I am able to make it look quite neat and clean by having all of the writing come from my printer.

I use a material called "applique." Applique is similar to clear contact paper, but its surface is suitable for typing or printing. It can be cut with scissors. The backing is meant to be peeled away, allowing you to stick the printed material down wherever necessary. Applique is available from drafting supply stores for about \$1.00

<u>Lines Per Inch</u>	<u>Dot Command</u>
3	.LH16
4	.LH12
4.8	.LH10
5.3	.LH9
6.0	.LH8
6.8	.LH7
8.0	.LH6
9.6	.LH5

Figure 2

Vertical Spacing Versus Dot
Commands

per 8-1/2" by 11" sheet.

Thanks and Apologies

We have been without a home and office for the past 2-1/2 months while our new home and office was *slowly* being completed. We packed up everything, including the computers, hoping our homeless period would be short. We survived four house-sitting jobs, a flood, two kids in a motor-home for three weeks, and a lost cat (now returned). As I write this in the middle of October, we just got a temporary occupancy permit and we're living out of boxes—but we're in!

During our homeless period, I received a lot of mail from the readers of *MOR*. Unfortunately, during this period we were utterly disorganized, and I'm afraid I only answered part of the mail that needed answering.

If you didn't receive a reply, I want to sincerely apologize. I also want to thank all of you for your correspondence. For one thing, it really makes me feel good to know that somebody actually reads my column. Secondly, it helps me plan future columns.

Thanks again, and happy computing. ■

Last issue I asked that someone who really understands the library utility NULU write a .DOC file explaining it to the uninitiated. Since then I've learned that there were two FLOBs containing NULU versions—FLOB #3301, which did contain a .DOC file, but that file is inside of a library so that you need to already know how to use NULU to extract it, and FLOB #2501, which has a file called NULU11.DOC. J.L. Rhodes of Lynchburg, VA, M.G. Dooley, Jr., of Kirkland, WA, and Leonard Goldstein of Alexandria, VA, all sent me copies of various .DOC files, however, and others called and wrote offering to do the same. Thanks! If you don't have a .DOC file for NULU, you can either order FLOB #2501 or, if you prefer, send a blank disk and return postage to the address at the bottom of this column, and I'll see that you get a copy. (Mr. Dooley tells me that he, too, plays the banjo; what a great name for a banjo player!)

Meanwhile, Gordon Northrup, MD, of Lee, MA, suggests that

We're more on our own than ever, so if you know a solution to a problem, don't assume someone else will write in; there are not so many of us that you can count on that. Whether you have questions or answers, keep them coming: Bill Steele, P.O. Box 782, Ithaca, NY 14851, 607/273-2132; MCI: WSTEELE, 254-5833.



From the Mailbox

by Bill Steele

those unfamiliar with NULU read the short writeup on it in *The Free Software Handbook* from Peopletalk Associates, P.O. Box 863652, Plano, TX 75086.

This month's request: What do you know about programs and methods for converting NW/WS files to and from other word processing programs?

Dr. Northrup sent along a question of his own: "Though MOR's ROM 3.1 and its CBIOS fixed my cursor keys, it made two problems. First, what is IMS.COM? Second, my Drive C doesn't work any more. If I call for it from the CP/M prompt, after 11 seconds (!) I get 'Disk error on Drive C: Drive not ready,' etc. R brings the same message, and A brings 'CP/M error: Drive C: invalid.' Calling for D, ditto, but calling for E works. Calling for F and higher brings an almost immediate 'Drive F: invalid.'" Most likely you're using the wrong CBIOS.

The ROM kit comes with a slew of CBIOS files, and you're supposed to rename the appropriate one to CBIOS.HEX before running the installation program. You may have used CBIOS4 when you should have used CBIOSMOR. Check the instructions.

Questions about overheating and fans also brought many replies. Allen C. Bennett of Raleigh, NC, writes, "I put in an Archer Cat. # 273-242, 32 cfm 120 volt 3" fan (Radio Shack—\$14.95). The case on my MD11 is exceptionally cool now. You have to take out the power supply to get to the wiring and solder connections from the fan to the power switch on the rear. Mount the fan so it blows air *out*. Use snips to enlarge the fan opening slightly. I used a piece of duct tape to block off about three-quarters of the opening at the top rear of the computer, so the fan would pull air from the front to sweep over the top of the hard disk."

Allen has a P.S.: "Does anyone know how to get the system prompt after loading SmartKey II? I lock up, have to reset." Sounds like it's overwriting part of CP/M, which it should be smart enough not to do. Are you using some other resident program, like a spooler, that changes the CP/M addresses?

Fellow columnist Ken Grymala refers us to his letter in MOR Vol. 2, #4, and his article "Cooling a Hot Computer" in *Micro Cornucopia*

#21, Dec/Jan '85. The gist was that while Morrow regards a hot MD11 as "within specs," the heat causes problems and hardware failures, although later versions apparently have better cooling. His was reaching an inside temperature up to 145 degrees F, while the floppy disk drive was rated only to 115 degrees. For a while Ken sold kits consisting of a 3-inch fan and an aluminum case. He now has a few kits consisting of a direct replacement 2-inch, 12-volt DC fan, mounting hardware and a cover for the rear louvers for \$39.95 postage paid, with a 15 percent discount for orders of five or more.

Also, Ken says, "I have run an MD11 on its side for quite a while. This has two benefits: it sure takes up less table space, and the cooling is much better! I have a Computer Memories Inc. hard disk in my computer and have not experienced any problems running it horizontally or vertically."

W. R. Vogel of Seattle, WA, says, "If the insulation on the cables inside the cabinet feels rubbery, it's definitely too hot, but it's hard for someone who doesn't have his hands in the works all the time to judge. As for standing the machine on its side, I'm not sure, but I've seen a number of IBM PCs run that way." He wrote mainly to take issue with my statement that the computer will last longer if turned off when not in use. "In fact there is no known wear mechanism in semiconductors. There are three (major) things that will cause semiconductors to fail: excessive heat, heat cycling (hot then cold) and power surges/static electricity. All can physically damage the chip or wires leading to it. Turning the computer off when it gets too hot actually causes thermal cycling; in time this will cause the chips or conductors to break because of the constant expansion and contraction. Each on-off cycle causes a power surge as well. Power surges create rapid thermal cycling as the

excess power is absorbed. For both these reasons I would recommend leaving the machine powered up except when connecting cables or performing other service, or during lightning storms or power outages (power often surges when it is first restored). My MD2 is only powered off under the above conditions. I have had it over two years without a single failure." I won't argue with this, except to say that I've had my MD3 for two years and nine months, turning it on and off several times a day, and no problems either. Probably takes longer than that to wear it out either way. Anyone else care to get into this? During lightning storms I *unplug!*

Mr. Vogel also offers some ideas on why you can't get bidirectional printing with some programs. "Some printers power up with bidirectional printing on, others with it off. The effect the computer/software may have is to disable bidirectional printing. Your printer manual should tell you how the printer is set on power up and what codes to send in order to change it. Most printers automatically disable bidirectional printing when doing graphics because it causes small misalignments between odd and even rows." So, if you get bidirectional printing with, say, WS but not with LogiCalc, it may be that your printer comes up with bidirectional printing off and WS is installed to turn it on. Try sending commands to the printer before loading LC (or whatever) as described in this column in *MOR* Vol. 3, #3.

More on heat: **Denis Kuwahara of Steilacomb, WA,** had the same "disk error" problem reported by **Jon Lyon** last issue. "It appeared to be most pronounced when I used a disk with a high-polish surface, such as Fuji or Scotch, but not as apparent on Verbatim or Maxell. From this I attributed it to head stiction, a condition that occurs when two highly polished elements are in contact with each other. High temperature seems to

aggravate stiction and the MD3 is a good heater. I installed a cooling fan in the MD3 and suddenly the problem disappeared, and has not reappeared in a year and a half. I understand that later versions of the MD3 have a software fix: The firmware moves the disk head, breaking the stiction, prior to starting up the disk drive motor." Sounds like another answer to the oft-asked question, "What are the advantages of upgrading to a newer ROM?" The fan Denis installed, incidentally, was a 230-volt unit, so it runs very quietly on 120 volts. "The only noise I hear is from the ball bearings. It moves enough air to keep the case at room temperature at all times."

John William Johnson of Bloomington, IN, is having trouble updating Correct-It's master dictionary. "I think I follow all the instructions correctly, but when the DICTEDIT program is complete, AUXDICT.TXT has not been integrated into DICT.BIN." There are two possibilities: a) You did everything right, and there's a bug in DICT-EDIT.COM; or b) You made a mistake. Experience suggests the latter is more likely, but from what you've written I can't tell exactly what you did. One possibility: If you follow the instructions carefully, you end up with two new files, which you may have named "DICT.NEW" and "DINDEX.NEW." Now you must delete the old "DICT.BIN" and "DINDEX.BIN" and rename the new files to those old names. If you haven't done that, Correct-It will simply be checking the old dictionary again the next time you run it.

Sean M. Butler of San Anselmo, CA, has an MD11 (ROM Ver. 1.9), CP/M 3.0 (Ver. 2.0). "If I run VERIFILE on the hard disk and come up with no errors, then run INITDIR to make use of the time-stamping feature, then run VERIFILE again, it will fail after listing BACKUP.COM, BNKBIDOS.SPR and

Continued on p. 51

I've had some very interesting letters since my last column. Mrs. Louise L. of San Francisco had a very neat idea to help her remember what she has learned each time she uses a program. When she masters some particular function, she writes down the steps she took to get there. This way she has a "check list" for the next time she uses the program. No matter how much time has elapsed between sessions, she doesn't have to re-invent the wheel! Thanks, Louise!

Another question came up that leads into the body of this bimonth's column. The question was: "I got all these neat public domain programs from my local BBS. How do I run them?" Let me start to answer that question by talking a little about the CP/M file structure.

CP/M is not just an operating system, it is a Disk Operating System (DOS). What that means is that not only is CP/M capable of handling disk drives, it *requires* them to operate. Now disks are organized as cylinders, heads and sectors. Picture your disk being made up of 40 separate little circles of disk material, each one inside another. These are your cylinders. Each cylinder is 1/48 inch wide. Each has two surfaces, or tracks. If you have single-sided drives, only one of these surfaces is used and "cylinder" and "track" mean the same thing. On double-sided drives, you need to know which surface is being used as well as

Send your questions and comments to Mike Allen at 400J Summer Wind Way, Glen Burnie, MD 21061.



Tools for Tyros

by Mike Allen

which cylinder. Different manufacturers use different methods of combining the head number (which signifies which surface of the cylinder is being used) with the cylinder number to come up with the track number. Some systems don't even bother with the track number, but since many of the utilities used in CP/M do refer to tracks (like DU), I'll mention how Morrow figures out tracks.

No matter if you have a single- or double-sided system, there are 40 cylinders on your disk, numbered from 0 to 39. (Kids really should be taught to count from 0 to 9 and not from 1 to 10. The invention of the "0" by the Arabs was one of the most significant discoveries in mathematics!) With an MD1 or MD2, the track number is simply the cylinder number. With an MD3 or the floppy on an MD-HD, there are two heads, one for each

surface, numbered 0 and 1. To get the track number, the cylinder number is doubled and the head number is added. The tracks go from 0 to 39 on a single-sided system and from 0 to 79 on a double-sided system. If you watch and listen when formatting a double-sided disk you can hear the heads move every two tracks.

Each of these tracks is broken up into sectors. Morrow chose to use five *physical* sectors on each track. Each of these physical sectors can contain 1K of information, be it data, programs or what not. Now some of you out there have been doing some math. "1K per sector times five sectors per track equals 5K per track. 5K per track times 40 (or 80, for the double-sided system) tracks equals 200K (or 400K) per disk. Wait a minute, I've only got 186K (or 384K). What happened to the other 14K (16K)?" Well, it's pretty simple. Two tracks (10K) are reserved for CP/M. The remaining 4K (or 6K) is for the directory, a smaller directory for the single-sided system since it stores less information.

What is a directory? The directory enables CP/M to find a file on a disk. What is a file? Aha, now we come to the nitty-gritty. A file is information stored on the disk in such a manner that we can get it and use it. For us humans it is easier for files to have names. Computers don't like names; they like numbers. What the directory does is allow the computer to take a name and turn it into numbers that it can understand. For instance if I have a file named "JUNQUE," the directory allows CP/M to know what tracks and

sectors that file is stored in and in what order. It also tells CP/M such things as what user number the file is stored under, whether the file has been declared read-only, whether it is visible to the "DIR" command and, in the case of CP/M 3.0 (MD-HDs), whether the file has been modified since the last back-up.

File names deserve some further discussion. There are actually two parts to a file name, the file name itself and the type. The file name can have from one through eight characters. The type can have from none through three. CP/M automatically fills out the file name and type with spaces if you don't use it all. You may not use lower case letters or <>,:;=?*_%|()^ in a file name or type. (It is possible to use the forbidden characters, but it makes the file damn hard to erase! Look out in MBasic since it is possible to save a file with lower case letters from it.)

Most programs like NewWord or SuperCalc create their own data files but will ask you to name them. In general, the convention is to use the name to identify the contents and the type to give it a generic label. There are some conventions for types that have arisen over the years; BAS = BASIC language, BAK = a back-up file from a word processor, C = "C" language, PAS = PASCAL language, ASM = 8080 assembly language, MAC = MAC macro-assembler assembly language, \$\$\$ = a temporary file that gets erased when the controlling programs ends, etc. There are two types that have special meaning to CP/M, COM and SUB. SUB is a SUBMIT file. I mentioned the SUBMIT utility in my last column. COM is a COMmand file. When you give CP/M a command from the CP/M prompt, it first looks to see if it is a built-in (resident, remember?) command. If it is not, then it looks on the disk to see if there is a matching file with a COM type. (With the MD-HDs, it will also look

for a SUB type if it doesn't find the COM type.) If there is a matching file, it will then load that file into memory and start executing it. Hence when you type "WS" to run WordStar, CP/M first looks to see if WS is a resident command, and after it decides it isn't, it looks on the disk for a file called WS.COM (actually WS____.COM). If it finds it, it loads it up and starts running it. If it doesn't, it says something obscene like "WS?"

Getting back to the original question: "How do I run my new programs?" You will have to look at the directory of your disk (DIR<CR>) and look for the following file types: COM, CQM, CZM, OBJ, OQJ, OZJ. Suppose that the program you find is named "JUNQUE." If you find "JUNQUE.COM," all you have to do is type "JUNQUE<CR>" from the CP/M prompt and the program will run. If you find "JUNQUE.OBJ," you will have to rename it (REN JUNQUE.COM=JUNQUE.OBJ<CR>). Then you have a file called "JUNQUE.COM," which you can run. The CQM and OQJ types are "squeezed" versions of COM and OBJ types. You need a program like USQ.COM or NSWEEP.COM to "unsqueeze" them. Then proceed as before with the unsqueezed file. CZM and OZJ are the "crunched" versions of COM and OBJ. The program UNCR.COM will "uncrunch" them. Why all this renaming, squeezing and crunching? The renaming of COM files to OBJ files came from the Remote CP/M (RCP/M) systems that are available over the phone lines. It was instituted as a protection for the system operators (SYSOPs) so that someone couldn't upload a COM file and then run it. You can imagine what some sickie could do if he could put his own operating program into someone else's system. Squeezing and crunching came about to save disk space. These are just two different methods of storing a file on a disk in such a manner that it doesn't use as much space. How many

of us ever have as much disk space as we want?

I mentioned that CP/M is a disk operating system. Actually CP/M consists of three parts: the Basic Input Output System (BIOS), the Basic Disk Operating System (BDOS) and the Console Command Processor (CCP). This modular approach to an operating system was quite a conceptual breakthrough. Prior to CP/M, most operating systems were designed with a particular machine in mind. As a result, programs written for Ataris couldn't be run on Commodores or Apples, even though they all used the same CPU (a 6502—in my opinion the best of the 8-bit microprocessors).

The creators of CP/M said to themselves (software types talk to themselves a lot!), "We'll design a generic operating system around an Intel 8080 and make it easy for the user (or manufacturer) to interface it with his particular machine." Hence the modular approach. Only the BDOS and the CCP are supplied by Digital Research.

The CCP is that part of CP/M that allows you to enter commands from the keyboard. It also contains the resident commands. The interesting thing about the CCP is that it is only needed when you are commanding the operating system to do something from the keyboard. Once you have loaded a program, it is no longer needed. Quite often programmers make use of this by using the memory area where the CCP resides for their own program. (In CP/M 3, Digital Research took this to its logical conclusion and made the CCP a separate program like any other program.) This means, however, that it is necessary to reload the CCP whenever a program is done running. This is done by a process called a "warm boot." You can also force a "warm boot" from the CP/M prompt by typing a Control-C (^C). A warm boot does more than just reload the

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From Morrow to Mac

*How to make Morrow WordStar files digestable by
Macintosh MS Word*

by Sypko Andreae

Apple's Macintosh computer is one of the best machines to use for desktop publishing these days. It has several programs available for formatting and editing text, which allows you to choose from many type sizes and fonts. In quite a few cities you can find copy shops that have several Macintoshes hooked together with one or two laser printers, which can produce typeset text on 8-1/2 by 11 inch sheets, with a quality that comes close to what any typesetting shop can provide. This helps in saving typesetting expenses, and it makes for more flexibility in the production of a newsletter or magazine.

In Berkeley we are spoiled by having six copy shops that have Macs and laser printers for rent. They charge \$5-6 per hour to rent a Mac, and the copies produced by the laser printer cost an additional 30¢ per sheet. These shops have a variety of programs available to treat your text with, from a text-processor like MicroSoft Word to true desktop-publishing programs like PageMaker or ReadySetGo. The only problem with the copy shops is that they are busy, noisy and crowded. It nearly wore out your managing editor during our first try at producing

a typeset magazine. Now *MOR* has a Macintosh in the office, and we use the copy shops only for quick visits to print out on a laser printer what we have wrought on a floppy with our Mac in the office.

But how do you get Morrow WordStar files inside a Macintosh in such a way that MicroSoft Word or PageMaker can deal with them? There are several problems to solve. First, you have to figure out how to get the files accross. Then you have to choose appropriate modem programs. Finally, you have to worry about the incompatibility between WordStar files and MicroSoft Word files.

Connecting the Computers

File transfer via floppies is ruled out because the Morrows have 5.25-inch floppies and Macs have 3.5-inch disks, thus being hopelessly incompatible. The most suitable way to transfer files in this case is through a cable connecting the serial ports, using modem programs. The cable is rather special. You can make it yourself or you can buy it at a store. We used the latter approach and wound up having to use two cables and a null

modem. A null modem is nothing more then an adapter, needed in our case to swap the lines of pins 2 and 3 on the DB-25 connector side, to overcome an oddity in the serial port of the Morrow. Refer to the cable diagrams on the next page.

The female connectors are drawn as they appear when you look right at them. The following cable diagram assumes that the internal jumpers of the serial port of the Morrow have not been changed from the factory setting.

DIN-8	DB-9	DB-25	DB-25	
				M
M 6 -----	8 -----	1 -----	1	○
A 5 -----	5 -----	3 -----	2	R
C 3 -----	9 -----	2 -----	3	R
4 -----	3 -----	7 -----	7	○
cable	cable	null		W
0.5 ft	6 ft	modem		

The 6-foot-long "Mac-modem" cable and the very short "DIN-8 to DB-9" cable are available in most computer stores that carry Macs. The DIN-8 connector is small and round and plugs into the modem port of the Macintosh Plus. If you have a Macintosh 512, then you don't need the short adapter cable, because this

older Mac model already has a DB-9 modem port connector. You can put the null modem together without tools by using a little kit such as Inmac's EAI Line-Link (which can be ordered by calling Inmac at 408/737-7777 and asking for their product #308). To make things even more complicated, sometimes a store will sell you a Mac-modem cable inside of which the lines connected to pins 2 and 3 of the DB-25 connector have already been swapped. In this case you don't need a null modem at all. But unless you are lucky on the first try, you may have to do some experimenting.

Selecting Modem Programs

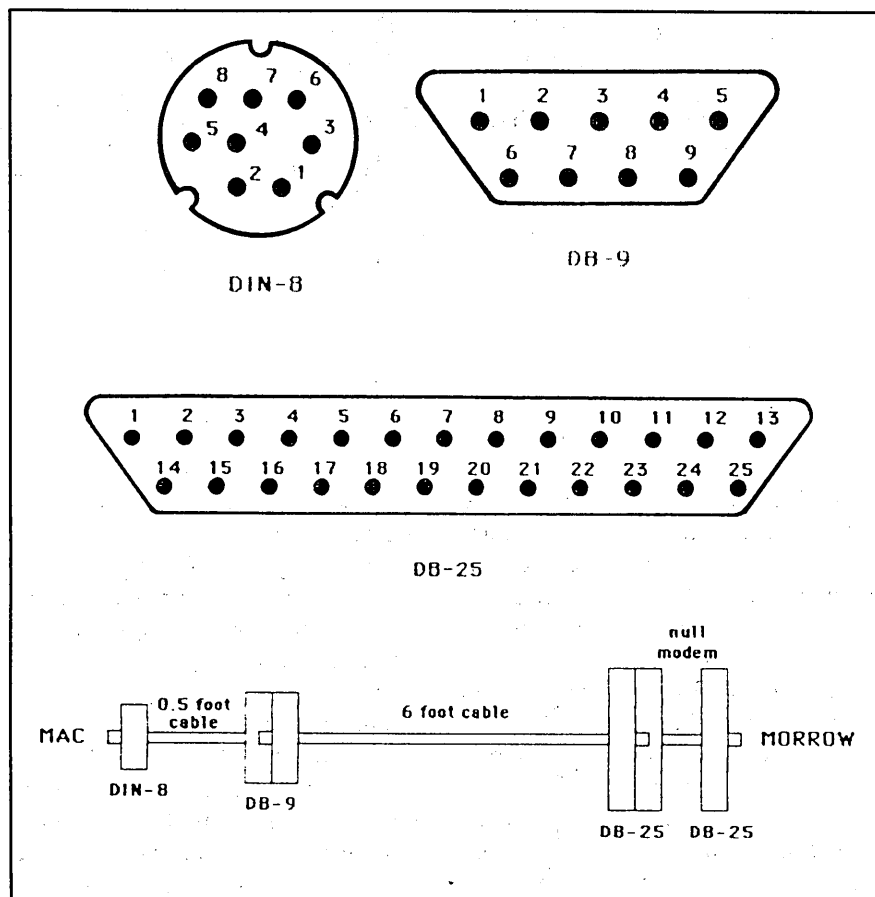
Modem programs are needed to ensure proper transfer of files, because they have special code built into them that performs synchronization and error checking. But you don't need modems, which are only needed when distances are large and you need the telephone network to help make the connection. In our case we are using direct cabling between the serial ports of the two machines, and we bypass the modems and the phone altogether. The error checking is valuable because there could be a "glitch" on the line that could mutilate a character of a file. These programs can detect that error and send that piece of file across again. The synchronization makes sure that the sending computer does not transmit faster than the receiving computer can take it in.

The modem programs we chose were MicroPhone for the Mac and IMP224 for the Morrow. What these programs have in common is the XMODEM file transfer protocol. This protocol involves a handshaking system to take care of the synchronization and error checking. A file's data are sent a block at a time. The blocks are 128 or 1,024 bytes long. The baud rate we use is 9,600.

MicroPhone is a quite sophisticated

program written by Dennis Brothers and sold by Software Ventures Corporation, which happens to be right around the corner from the MOR office. When we knocked on their door

PageMaker files. WordStar files are not pure ASCII text files. (ASCII is the term used for a set of rules, including what character is represented by what binary code in each byte.)



to explain our file transfer problems, they were most helpful in showing us how to go about solving them and even provided us with a copy of their program. Next day we were back with a portable MD3 to learn all we could about interconnecting the computers and running the program. As always, once you know how to do it, it is very simple, but before that....

Resolving Incompatibility Between WS and MS Word Files

The other problem that needs to be dealt with is the differing natures of WordStar files and MicroSoft Word or

WordStar files contain control characters and use—when written in Document mode—the 8th bit in the last byte of a word or line to help WordStar do its formatting magic. Under the ASCII rules that 8th bit, when used, is not legal, and often causes havoc in text processors used to normal ASCII text.

If you read a WordStar file with MicroSoft Word, you get the most remarkable display effects on the Mac screen. The text is somewhat recognizable but has a sprinkling of strange symbols mixed within it—lots of squares, stars and even little men! This is caused by that 8th bit sticking up once in a while. To remove the 8th

bit, the WordStar file needs to be "filtered," which means that the file has to undergo a process whereby all those illegal characters are replaced by legal ASCII characters. Once this is done, the text-processors used by the rest of the world can deal with the file without further problems.

To filter a WordStar file, this is what you do: Open the file in WordStar on the Morrow and make sure that there is one blank line between each paragraph, then format the whole file without right adjust. Next use the program HARDSOFT to filter out the control characters and get rid of the 8th bit in those bytes where one exists. HARDSOFT (or HS) is available on FLOB/AUG85 #1, and here is what you see if you run it:

```
A>HS FILENAME.TYP
```

```
** HARDSOFT (version 1.1) by  
Kenneth M. Toy. **
```

```
File read completed, hardening  
completed, output completed.
```

The output file is FILENAME.HRD, named thus because you have just "hardened" WordStar's "soft" carriage returns. But now you have a file with "hard" carriage returns terminating *every* line. This won't do, because the Mac programs don't want to see any carriage returns within a paragraph at all; otherwise, their formatting schemes won't work. That's why you have to transform your WordStar file into a file consisting of paragraphs with all the carriage returns removed. You can use WordStar itself to accomplish this by finding and replacing all sequences of "<SPACE><CARRIAGE RETURN><LINE FEED>" with "<SPACE>" only. Then the only thing you need to remember is that in WordStar's (but not in NewWord's!) Find-and-Replace feature (^QA), a carriage return can be specified as ^P^M and a line feed character as ^P^J. It is wise to use WordStar here in Non-Document mode

(N) to avoid creating any more illegal ASCII characters.

Here is the complete receipt:

FILENAME.TYP:

1. In WS (D mode), get rid of justification:

```
^OJ (if necessary)  
^QBB
```

2. At A>, harden file:

```
HS FILENAME.TYP
```

FILENAME.HRD:

1. In WS (N mode), get rid of hard carriage returns:

```
^QA  
FIND: <SPACE>^P^M^P^J  
REPLACE WITH: <SPACE>  
OPTIONS: GN (then hit  
<ESC> for speed)
```

This trick leaves the carriage returns between paragraphs intact, so you don't lose what you want to keep. The file FILENAME.HRD is the one that appears to WordStar as if every paragraph consists of one very long line. The file is now ready for transfer to the Mac.

Transferring the File

MicroPhone is such a sophisticated program that it is almost embarrassing to use it for such mundane processes as file transfer. It is also so simple to use that you might completely forget to read the well-written manual. You feed the proper floppy to the Mac and MicroPhone comes up. Instead of the keyboard, you use the mouse to move the cursor around the screen. With the mouse, you can pull down menus and select items by "clicking" at them (pushing a button on the mouse while the screen cursor points at what you want).

Now you have to make sure the settings in MicroPhone are correct for what you want to do. Pull down the

"Settings" menu and click on the item "Communications." Here, select 9,600 baud, 8 bits per character, no parity and the modem port for the connection. Then, in the same "Settings" menu, click on item "File Transfer," where you enable X-On/X-Off pacing (so the transfer will not go too fast for the receiving computer), ask it to save the file as an MS Word file, enable XMODEM CRC (a good choice for error checking), enable MacBinary, enable YMODEM and enable 1K XMODEM.

Next thing is to check whether you have a good communication connection. Make sure the special cable is connected and start IMP244 in the Morrow, leaving it in Terminal mode or, better still, in Echo mode. In the Mac, the program MicroPhone is already in terminal mode. Type a few characters on either machine. What you type should appear on both screens.

Ready for file transfer? Then let's move FILENAME.HRD from the Morrow to the Mac.

At the Mac, pull MicroPhone's "File Transfer" menu down and click on "Select Receive Volume," which displays another menu that enables you to select the proper Mac disk drive so that the received file winds up on the disk you want. At the Morrow, tell IMP244 to send the file:

```
A>COMMAND:S FILENAME.HRD
```

Back at the Mac, pull down the "File Transfer" menu again and click on "Receive XMODEM," after which you can sit back and watch the blocks of data being counted as they zip by at 9,600 baud. MicroPhone then asks you to enter the file name (FILENAME.HRD), and this is possibly the first time you have touched the Mac's keyboard.

Now that the file transfer is complete, check the file with MS Word to see if it looks all right. If it does, you're done. ■

Writing with SmartKey

Increase your writing and editing productivity with key macros

by Stuart Froman

Key macros, those joys of the efficiently minded, are as personal as whatever gets typed. Only part of the purpose in sharing SmartKey II definitions is providing already tested macros. More important is exposure to the way others have logically adapted their systems to personal needs—perhaps generating new ideas.

I am a writer and writing consultant, working with files from 2 to 30K on an MD2 (Rev. 1 ROM) and Freedom 50 terminal with WordStar. Fast cursor movements, deletions, reformatting, and text movements are essential. The following definitions—and redefinitions—have evolved over nearly three years, and significantly speed up my editing. I have not included many of the more common definitions (save and resume, save and print) because these have been published often.

I have not added spaces to the definition strings (which is done in some articles for ease in reading) because some definitions require spaces. The brackets "<" and ">" are what SmartKey II uses to enclose keys and definitions and should not be entered as part of a definition string. Note that ^M = a <RETURN>, ^[= <ESCAPE>, and B: = B drive.

Keyboard Layout

The first thing I realized when I got SmartKey II was that I would be able to rework WordStar's awkward keyboard layout. It took perhaps three days to get accustomed to the new layout.

<_> redefined to <^Ps> (underline)—My very first redefinition: assign UNDERLINE ON/OFF to the grave

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accent ("") key. Think about it. How many times do you toggle underline? How many times do you type a ""? (I use the *supershift* grave accent to type a grave accent.)

<^N> redefined to <^X> (line down)

<^U> redefined to <^E> (line up)

<^J> redefined to <^D> (char right)

I especially hated the left-hand stretch for the control key and cursor diamond, so now the diamond is under my right hand with ^H as a backspace, and ^U, ^J, and ^N. The usual functions of these keys have been left to the supershift or transferred to other keys. (^J is assigned to .^J, ^U is assigned to .^U, and insert a line (^N) is assigned to ^X.)

^U (line up)

(char left) ^H ^J (char right)

^N (line down)

<^A> redefined to <^Qs> (screen left)

<^S> redefined to <^A> (word left)

<^D> redefined to <^F> (word right)

<^F> redefined to <^QD> (screen right)

<^E> redefined to <^Qe> (top of screen)

<^Y> redefined to <^Qx> (bottom screen)

<^> (CLR/HOME) redefined to <^Y> (delete line)

The left hand now punches instead of holds down:

^A

^S

^D

^F

screen left word left word right screen right

I almost never used TOP OF SCREEN and BOTTOM OF SCREEN until I reassigned them. Now I use them often, leaping instantaneously around the screen—and because I've reassigned DELETE LINE to the <CLR/HOME> key, I never accidentally delete a line when all I want is a word (^T).

<^L> redefined to <^V> (insert)

<^V> redefined to <^L> (find again)

I toggle INSERT frequently, but rarely issue a FIND AGAIN, so I switched ^V and ^L. Now INSERT is right there under a waiting finger (admittedly, not much use to the hunt-and-peck typist).

Editing

Editing often requires re-ordering of text. The following macros move text to the end of the file, then return the cursor to the origin of the move. You can, for example, brainstorm a list, then alphabetize it or organize it by sending each line to the end of the file in the order you want.

<^Qc^Kv^Qv>—MOVES any already BLOCKED text to end of file and RESUMES (change ^Kv to ^Kc to COPY to end).

<^Qs^Kb^X^Kk^Qc^Kv^Qv>—BLOCKS and MOVES line to end of file and RESUMES (change ^Kv to ^Kc to COPY to end).

<^Qs^Kb^Qf^N ^[^Kk^Qc^Kv^Qv>—From the first line of a paragraph, BLOCKS and MOVES paragraph to end of file and RESUMES (change ^Kv to ^Kc to COPY to end).

<^Qs^Kb^X^Kk>—BLOCKS a line.

<^Qs^Kb^Qf^N ^[^Kk>—BLOCKS a paragraph.

One of my favorites: <^B^Qp>—This key automatically REFORMS a paragraph and returns the cursor. If, as I do, you butcher your paragraphs with insertions and deletions, this lets you continually REFORM and keep working—an incredible time saver.

These have made life simpler in all sorts of ways:

<^Qr^Qf^@^>—FINDS an "@" anywhere in a document. If I'm editing a long file, and want to check something at the beginning or end, or am ready to quit for the day, I simply type an "@." When I want to continue, even the next day, I use this key. If you want, you can add a "^G" (delete character) to the end of this definition and automatically delete the "@."

<^A^T>—DELETES a word to the left—the last word typed—a definite Wordstar oversight! (There is even a space in the WordStar Manual "summary of commands" where it should have gone!)

<^Qf^N ^Mb^M^D^D^D^D^D^D>—Sends the cursor to the beginning of a paragraph.

<^Q^Q^Y>—Automatically repeats DELETE LINE. Much quicker than blocking for three or four lines.

<e^Ph^Pt'^Pt>—Types an "e" with an acute accent: é.

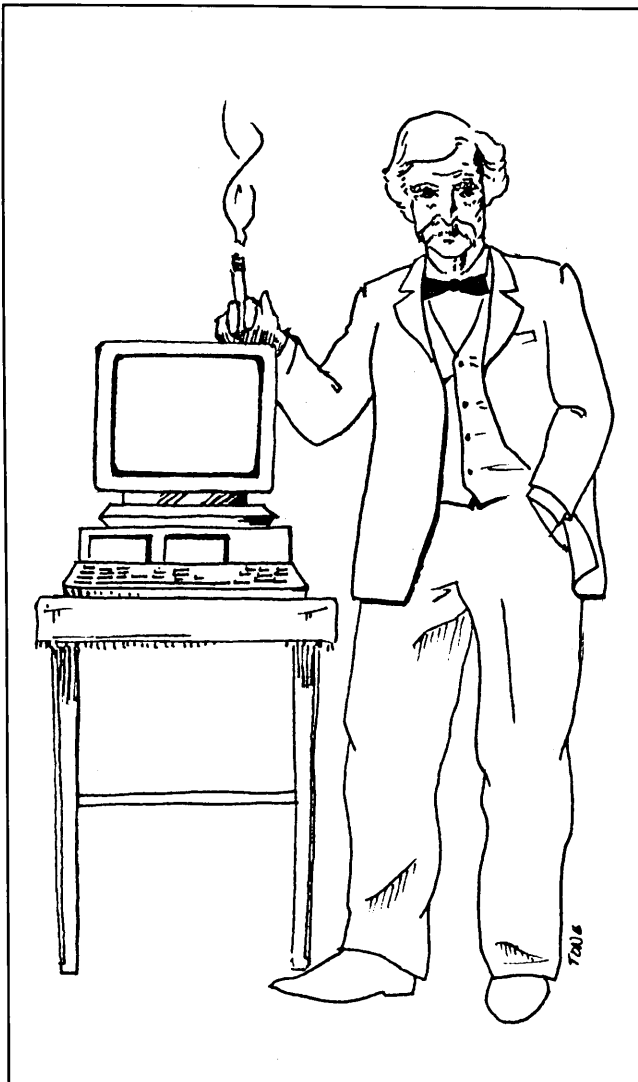
Paging in WordStar

This is a paging system that works very much like the paging system on the Wang Word Processor. It works best for long, double-spaced files, such as manuscripts prepared for submission.

Because I did not trust WordStar to put page breaks in the proper places for polished manuscripts, I use a ".PA" to force page breaks exactly where I want them. I can then use WordStar's FIND command to find pages.

<^Qf^N^M52^M^D>—FINDS the 52nd ^N. Along with the next key, used to enter a .PA for each page.

<.PA>—After moving your cursor to where you want



the page break, this key enters the .PA. If single spacing, you'll have to insert a line.

<^X^Qf.PA^>—Once all the .PAs are in, this key goes to the next page.

<^E^E^Qf.PA^Mb^M^X>—This key goes to the previous page.

<^Qr^Qf.PA^M><^M^E^Qf.Pa^Mb^M^X>—This key waits for you to enter a number and then automatically goes to that page number. The second FIND sequence in this definition is needed because when you find the second .PA

(Page 2) you are at the *end* of Page 2 and must go back to the previous .PA. (Note that this definition requires a "pause." When entering the definition, you must hit the SETUP KEY *once* after the first ^M, then resume entering the definition.)

<^Qa.Pa^M^Mng^M>—GLOBALLY DELETES the .PAs.

"Temp" File System

These allow me to READ, WRITE, and PRINT a file called "temp"—making possible easier movement of information between files. If you've had to do this, you know how cumbersome it is. This system, however, makes it seem almost automated, at least much less painful and clumsy.

<^KwB:temp^M>—WRITES BLOCKED text to a "temp" file.

<^KwB:temp^M^KpB:temp^>—WRITES and PRINTS the "temp" file. Great for printing a section of a longer file.

<^KrB:temp^M>—READS a "temp" file.

<^KjB:temp^M>—DELETES a "temp" file from inside another file.

<^KyB:temp^M>—DELETES a "temp" file from the "No-File Menu."

Again, these definitions reflect my wordprocessing needs. I hope you'll find them useful, or that they'll give you some ideas for speeding up your own tasks. ■

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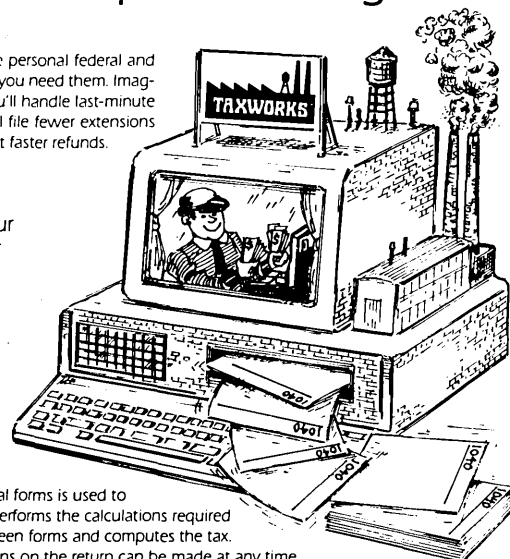
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What's in a Word?

Patching NewWord to include punctuation marks as part of words

by Bill Steele

One of the first things we noticed about NewWord was that it handled punctuation marks differently from WordStar. In WordStar, if you use ^T to delete the last word in a sentence, the period, question mark or exclamation point disappears along with the word; in NewWord, the quotation mark just sits there, and you have to hit ^T again to get rid of it. Ditto for commas, semicolons, etc. When you're moving the cursor with ^A or ^F, it jumps to the punctuation mark and stops, instead of going past it. Some people found this an improvement, others a nuisance. Well, like almost everything else in NewWord, as at Burger King, you can have it your way.

NewWord contains a table that tells it which characters are to be considered part of a word and which aren't. You can change this table with DDT or through the Special Patches menu of NWINSTAL, at the label LGLCHR. There's a copy of the table in the User

Area Listing at the back of your NewWord manual—it's on page C-24 of my Ver. 1.17 manual and on page 25 of the supplementary booklet that came with my upgrade to Ver. 2. In case you don't have your manual handy, we're reproducing the table here as Figure 1.

The numbers in the first column are the addresses at which the table is stored. Shown are the addresses for Ver. 2.xx; in Ver. 1.xx the first address is 06D5. The second column shows the hex numbers that are stored at each address (taking two at a time to make a neater display). The fourth

column shows the binary numbers that are equivalent to the hex numbers. The last column is to remind you where you are in the table.

This is an example of what's called "bit-mapping," and it could be a little confusing because you're probably used to the idea that a two-digit hex number represents *one* character in the ASCII code. Here, each digit of each binary number stands for one character. Sixteen binary numbers with eight digits each can represent the entire 128-character ASCII code. A great space-saver, which works because we only want to store one piece of

06D5		LGLCHR::;	01234567 89ABCDEF	
06D5	00 00	DB	00000000B,00000000B	; Codes 00H to 0FH
06D7	00 00	DB	00000000B,00000000B	; Codes 10H to 1FH
06D9	00 00	DB	00000000B,00000000B	; Codes 20H to 2FH
06DB	FF C0	DB	11111111B,11000000B	; Codes 30H to 3FH
06DD	7F FF	DB	01111111B,11111111B	; Codes 40H to 4FH
06DF	FF E0	DB	11111111B,11100000B	; Codes 50H to 5FH
06E1	7F FF	DB	01111111B,11111111B	; Codes 60H to 6FH
06E3	FF E0	DB	11111111B,11100000B	; Codes 70H to 7FH
06E5	00 00	DB	00000000B,00000000B	; Codes 80H to 8FH
06E7	00 00	DB	00000000B,00000000B	; Codes 90H to 9FH
06E9	00 00	DB	00000000B,00000000B	; Codes A0H to AFH
06EB	FF C0	DB	11111111B,11000000B	; Codes B0H to BFH
06ED	7F FF	DB	01111111B,11111111B	; Codes C0H to CFH
06EF	FF E0	DB	11111111B,11100000B	; Codes D0H to DFH
06F1	7F FF	DB	01111111B,11111111B	; Codes E0H to EFH
06F3	FF E0	DB	11111111B,11100000B	; Codes F0H to FFH

Figure 1

Bill Steele is a freelance writer, specializing in science, medicine and technology. He also writes the "From the Mailbox" column for MOR.

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information about each character, a "yes" or "no." If the digit representing a particular character is a "1," then NewWord will treat that character as "legal," i.e., part of a word. If the digit is a "0," the character will be considered separate.

Figure 2 may make this a little clearer. It shows just the center part of the table spread out, with the character represented by each digit directly beneath it. (Actually, this is just the top half of the table; we'll get to the bottom half later.) This is shown the way NewWord comes to you, with

just the upper- and lowercase letters and the numbers 0-9 "legal" and represented by 1s.

Now, to make other characters legal, just change the digits that represent them to 1s. For instance, to make the exclamation point, single- and double-quotes legal, change the third binary number down in the left-hand column to 01100001. If you write a lot about money and want to include the dollar and percent signs, the number would become 01101101.

I decided to add all normal punctuation marks, including paren-

theses and brackets, but left out the hyphen so that NewWord would treat each half of a hyphenated word separately. I also added ^S, because I do a lot of underlining. If you decide to include practically everything, be sure to leave out the space and carriage return characters, or the cursor will jump a whole file at a time.

Once you've picked out the characters you want and made a new list of binary numbers, you have to convert them to their hex equivalents and patch the hex numbers in at the appropriate addresses. Fortunately, the conversion is easy to do, even if you don't understand binary arithmetic. It turns out that each binary number can be broken into two four-digit parts, and each part converts to a single digit of a two-digit hex number, as shown in Figure 3.

So, for instance, the two binary numbers we used as examples above break down like this:

```

0110 0001    0110 1101
 \  /        \  /
 61          6D

```

Continued on p. 47

Code 00H	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Code 0FH
	^@ ^A ^B ^C ^D ^E ^F ^G ^H ^I ^J ^K ^L ^M ^N ^O	
Code 10H	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Code 1FH
	^P ^Q ^R ^S ^T ^U ^V ^W ^X ^Y ^Z ^_	
Code 20H	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Code 2FH
	< > ! " # \$ % & ' () * + , - . /	
Code 30H	1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0	Code 3FH
	0 1 2 3 4 5 6 7 8 9 : ; < = > ?	
Code 40H	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Code 4FH
	@ A B C D E F G H I J K L M N O	
Code 50H	1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0	Code 5FH
	P Q R S T U V W X Y Z [\] ^ _	
Code 60H	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Code 6FH
	` a b c d e f g h i j k l m n o	
Code 70H	1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0	Code 7FH
	p q r s t u v w x y z { } ~ <DH>	

Figure 2

Hex Digit	Binary Number
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

Figure 3

The Easy Way to Back Up

Keeping back-up disks with SUBMIT.COM

by Stuart Froman

Make back-ups! Don't fill your disks too full! These are two fundamental rules of disk organization. Much work can be lost due to a Disk-Full Error—everything can be lost if a disk goes bad. Here is an introduction to CP/M's SUBMIT.COM by way of setting up a time-saving and *work-saving* program to keep back-ups and check disk space. (Note: Throughout this article, I have assumed the following configuration: two drives—WordStar on the A drive, data files on the B drive.)

SUBMIT is a way of "batching" CP/M commands (i.e., anything you can type at the A>). (Note: EX15 is a public domain program, similar to, but in many ways better than, SUBMIT.) By typing one command I can:

- 1) erase all the .BAK files on my B drive (since I have a back-up on another disk, it doesn't make sense to waste the space);
- 2) get a list of how much space on the disk each file takes up—and how much space remains;
- 3) send a copy of the file I've been working on to a back-up disk; and
- 4) get back into WordStar, ready to open another file).

Keep in mind that you may be able to use SUBMIT for other repeated procedures that you now do with CP/M commands and with other programs besides WordStar.

First, see if STAT.COM, PIP.COM, and SUBMIT.COM are all on your WordStar disk by typing DIR<RETURN> at the A>. If they are not on your WordStar disk (and they won't be unless you or someone

else put them there), they are on your CP/M or CP/M utilities disk, and you need to copy them onto your WordStar disk. Put your CP/M disk in your B drive. At the A>, type:

```
A>PIP A:=B:PIP.COM<RETURN>
```

This copies PIP.COM onto your Wordstar disk. PIP is a program for copying files from one disk to another and you have just *used* PIP to *copy* the PIP program from the B drive to the A drive. In English you might read the command line this way: Copy to the A drive from the B drive the file PIP.COM.

When the A> reappears, type:

```
A>PIP A:=B:STAT.COM<RETURN>
```

This will put STAT.COM onto your WordStar disk. STAT is a program for finding out how much space is left on a disk.

```
A>PIP A:=B:SUBMIT.COM<RETURN>
```

This will put SUBMIT.COM onto your WordStar disk. SUBMIT is the program that will allow you to "batch" the other commands.

You need to be able to tell the computer what commands to SUBMIT. Do this by creating a *Non-Document* WordStar file on the WordStar disk called anything you want but with a .SUB type. Mine is C.SUB (for "copy"). In this file you list exactly the commands you want SUBMIT to run exactly as you would type them at the A>.

Stuart Froman is a writing instructor and freelance writer/editor in the San Francisco Bay Area. He is also a writing consultant for Clear Communication.

My C.SUB looks like this:

```
ERA B:*.BAK<RETURN>
STAT B:*. *<RETURN>
PIP C:=B:$1<RETURN>
A:WS<RETURN>
```

Yes, that's the entire file. Just make sure there's a <RETURN> after each line. Now save it.

Here is what each line means:

ERA B:*.BAK—erases any file on the B drive with a .BAK type.

STAT B:*. *—lists all the files on the B drive, indicating how much disk space they take up. It also gives the amount of space remaining on the disk.

PIP C:=B:\$1—sends to the C drive (Morrow's "virtual drive") whatever you want a back-up of. The "\$1" is just an ugly-looking variable (in math we used a simple X or Y). When you actually run your SUBMIT file, you won't see this or have to worry about it. You will type a file name that replaces the variable and gets copied to the back-up disk.

WS—calls up WordStar. If you call up WordStar with WS3 instead of WS, type WS3 here. If your tendency is to work on one file at a session—and when you are through working on that file you turn the computer off instead of

working on another file—you can leave off this last command. After making the copy, you can just turn the computer off.

Remember: All of this is going to be done automatically! All you need to remember is one command. You are setting this up just so that you *won't* have to remember it all!

There is one last thing you need to do in order to prepare for running a SUBMIT. Using the Non-Document mode, create a file on your WordStar disk with the name \$\$\$SUB. Just open it and save it; don't type anything in it. SUBMIT uses this file as it performs its magic, and it stays on the disk actually disappearing from and reappearing on your WordStar A drive directory. You don't need to create the file again, even if you write a new SUBMIT program.

Now you are ready to run the SUBMIT. As a test, create a file on your B drive—call it TEST—write something in it, save it, open it, and save it again. This way you will have TEST and TEST.BAK. Now let's say it is the end of a session and you want to make your back-up. From WordStar's No-File Menu, type X. This will give you either the A> or the B>, depending on the drive you "logged onto." If you are staring at the B>, get the A> by typing A:<RETURN>. Now comes the logic of the command

Continued on p. 49

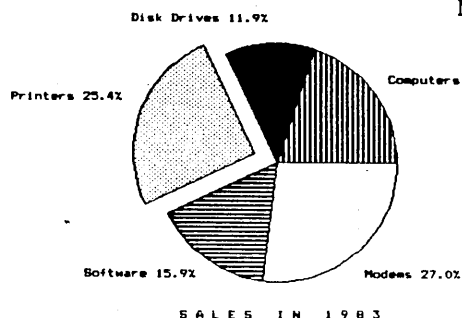
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— Profiles Magazine, 1985



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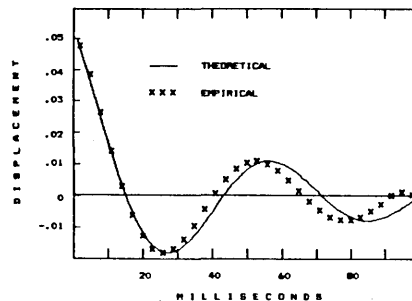
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Simplified Desktop Publishing

*A nonprofessional uses it to print his newsletter
—and you can, too*

by Haskell Hallmark

What do the terms "perfect copy," "deadline," "typing," "weekly," and "inexperienced" have in common? Me! As preacher of a small church, I found that I needed to produce a perfect weekly bulletin. But, I thought fearfully, I can't even type, much less publish my own newsletter. Fortunately, I received salvation by buying a used Morrow MD3 and have been singing praises ever since. Let me share with you how heavenly the solution to your simple desktop publishing needs can be. And with an "obsolete" computer at that!

Sometimes the simplest personal publishing needs are the hardest to satisfy, because they don't fit into the "high tech" category or the volume requirements that are thought of as legitimate or profitable. I was overjoyed to learn that a microcomputer would allow me the ability to edit on screen, then print a perfect manuscript every time I needed one. My typing skills, or lack of them, wouldn't keep me from the perfect copy I so desperately needed.

I didn't have to go down to the local Apple dealer to pay \$10,000 for their desktop publishing system. Nor did I pay \$15,000 for an IBM-compatible equivalent. Even though the more recent CP/M NewWord upgrade supports the Hewlett-Packard LaserJet Printer, I didn't pay \$3,000 for it either. I returned to the basics of page makeup that have stood the test of time among printers for centuries.

Haskell Hallmark has been preaching for 10 years, but has been writing for publication for only the past two. He is a member of the San Diego Writers' Editors' Guild, writes a CP/M column for the San Diego Computer Society newsletter, Personal Systems, and is a staff writer for the drug abuse prevention newsletter, "Not Me!"

Surprise! They still work!

The only thing that can be gained by using one of the modern desktop publishing systems is the ability to "cut-and-paste" on screen. But this is something that can easily be done by hand; you don't really need an expensive system to do it. And the actual writing and formatting of a manuscript is no different on a fancy, expensive system than on your Morrow! In fact, even if you decide to use an expensive system to produce your newsletter, you cannot print the finished product in quantity on a laser printer, because these printers are too slow and too costly per copy. (However, they will give you a nice master which you can either make photocopies of or take to a real printer for offset printing.)

My newsletter's weekly run of 20 copies has now grown to 30. Too small for sophisticated and expensive equipment purchases just yet, but important nevertheless. And NewWord supports everything you will ever need for simple desktop publishing... Plus, it's available.

If you have ever used the alternate pitch command (^PA), you know the difference it makes in printing your manuscript. A 56-column line takes up about six inches in 10 pitch. But in 12 pitch, it prints out in only 4-3/4 inches—perfect for a half page of 8-1/2 by 11 inch paper, which is 5-1/2 inches wide when folded. Try it with the Courier 10-pitch wheel most of you got with your MP 100/200/300.

It looks pretty good except all the letters are scrunched together, right? (Scrunched is one of those technical, printer-type terms.) Get a 12-pitch wheel and your problem is not only solved, but you will have some of the prettiest looking print around.

Buying a 12-pitch wheel is not difficult unless you have

to buy one from a store. The problem starts when the salesperson learns that you don't want just any 12-pitch wheel, you want one that will run on your machine. He or she somehow thinks this is narrow-minded of you, but will oblige and order one for you if necessary. Keep the receipt just in case you find the capital letters working fine but garbage in the place of the rest of the letters. I had to take two back before they got it right.

I recommend the Prestige Elite 12-pitch, which I find gives me very nice type and looks beautiful. However, any elite (i.e., 12-pitch) wheel should work fine if you like it. Do take the time to look at the seller's sample book and actually compare the letter size and spacing to see if the typeface really is what you want. I found that the difference between typefaces was sometimes only in the width of the letter and not always in the height, too. Make sure your choice is smaller all over so that it has a neater finished printface.

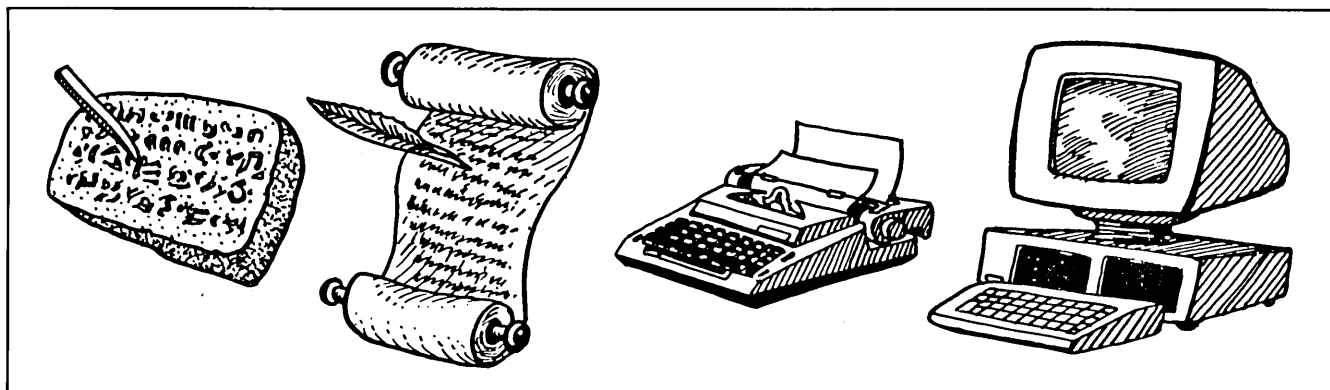
So now we have a WordStar file of 56 columns marked

tabbing over 15 spaces for five or six lines.

Now, write your article or collect your bits-and-pieces files, combining them into your new formatted file. Stop at line 45 or thereabouts to end with some margin at the bottom of the page. Voila! You have a page that will fit on the half shell of 8-1/2 by 11 inch paper. Repeat at least three more times, and you have a complete brochure, bulletin, booklet, or whatever you want to call it.

Actually, you aren't finished yet. One of the first questions I can hear already is, "I got so excited when I saw your format, I did it and printed it out just like you said. But it doesn't print out in the right place on a sideways inserted page!"

That's where the next step comes in. You print it out wherever it appears on the page and be happy with it, then use scissors to cut it out. (Oh, goody! I get to use scissors.) Cut close to the edge but don't feel you have to get so close to the type that you mar its beauty. (Exacto knives work great, but don't let your wife or husband see the kitchen



^PA at the beginning (but not on the same line as a dot command!). Turn on right justification (^OJ) and put in the dot command for microjustification (.uj on), which I find gives very nice copy using a true 12-pitch wheel, without proportional spacing being needed or even missed. Your title or heading can be done with underline and bold face. Be sure to leave some open space around it so it stands out. Usually a couple of blank lines between the title and text lines is enough, but experiment until you find the right combination for you.

If you want graphics, draw them yourself or call a friend with a Macintosh or IBM-compatible and have him/her print out some of the ClickArt stuff that is available to him/her on a dot-matrix printer. You can also find some decent art in CP/M public domain files that you can print out on a dot matrix printer from your Morrow. Make photocopies of your art, cut it out and set it aside for the paste-up later. Be sure to leave space if you'll be running it next to text; e.g., I use illustrated drop caps in my newsletters, so I leave space for them beside the text by

table after you've used one.)

Lay the pieces on a clean sheet of paper and organize them to make sure you have the right page with the correct side of the paste-up page. Oh, I didn't tell you there was a right and wrong side to the paper? But, of course, there is!

Fold an 8-1/2 inch piece of paper in half width-wise. (No, the 11-inch side is not folded!) Notice when you open it up that the front page doesn't go on the left side of the paper. If you put it there it will end up on the back of your brochure. Believe me. I did it...once. (Well, maybe twice. But no more!)

Your last page will go on the left side of the paper and your front page will go on the right side of the paper. (Professor Rubic, eat your heart out.) You should use a separate piece of paper to make your inside paste-up so that you don't have any bleed-over from the back side when you photocopy the finished product. The inside is created with page two on the left and page three on the right. That seems logical to me; how about you?

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MOR Products

Original **User's Manuals** published by Morrow.

<i>Prod #</i>	<i>Description</i>	<i>Price</i>
601	Correct-It User's Manual	8.00
602	CP/M 2.2 User's Guide (for MD2 & MD3)	12.00
603	CP/M Plus Guides (for hard disk MDs; 5 books)	35.00
604	MBASIC User's Guide	12.00
605	MD Companion Guide (for everyone who isn't compatible with CP/M)	12.00
606	MD User's Guide (for MD2 & MD3)	12.00
607	MD Hard Disk User's Guide	12.00
608	Morrow Software Sourcebook (1983 edition)	8.00
609	NewWord User's Guide	12.00
610	Pilot User's Guide	12.00
611	SmartKey User's Guide	8.00
612	SuperCalc User's Guide	12.00

Service Manuals to help repair or enhance your machine. These technical manuals are skillfully edited from internal Morrow data and were previously only available to Morrow dealers. (Even if you don't do the repair yourself, your repairman probably will need them.)

<i>Prod #</i>	<i>Description</i>	<i>Price</i>
700	Complete manual set (701-710)	80.00
701	Micro Decision Service Guide w/ schematics for Rev. 1.1 & 2.0 (for MD2 & MD3)	25.00
702	Diagnostic II User's Manual (disk sold separately)	25.00
703	Hard Disk MD Service Guide w/ schematics	25.00
704	SA 200 Shugart Mini Floppy Drive Preliminary OEM Manual (for SS drives)	15.00

705	SA 455/465 Shugart Mini Floppy Drive Service Guide w/ schematics (for DS drives)	15.00
706	MDT20 Terminal Reference Guide	10.00
707	MDT20 Service Manual	12.00
708	MDT50 Video Terminal Service Manual	10.00
709	MDT60 Video Terminal Service Manual w/ MT70 Video Terminal Supplement	15.00
710	David Block's original MD Q&A book	6.00

ZCPR3 is a Morrow-bootable CP/M 2.2 replacement by Echelon for the MD3. Complete with two disks and manual, the ZCPR3 kit provides an operating system superior to CP/M 3.0. (NOTE: If you order ZCPR3 through **MOR**, you qualify for a discount group purchase price of less than \$500 for a 10-megabyte hard disk made by Advanced Concepts for the MD3.) The **Diagnostic II Disk** contains programs that diagnose various components of your Micro Decision for quick in-house performance checks. (NOTE: The User's Guide for this disk, Prod. #702, sells separately.)

<i>Prod #</i>	<i>Description</i>	<i>Price</i>
801	ZCPR3	59.50
802	Diagnostic II disk	37.50

ROM Upgrade Kits contain instructions, ROM chip and software — everything you need to bring your machine up to date. (Some software that won't run on older machines *will* run with an upgrade.)

<i>Prod #</i>	<i>Description</i>	<i>Price</i>
901	ROM Upgrade Kit for MD3	35.00
902	ROM Upgrade Kit for MD Hard Disks	45.00

Floppies of the Bimonth

With every issue of **MOR**, we compile floppies that contain public domain programs, short articles and other interesting tidbits. Each **Floppy of the Bimonth (FLOB)** costs \$8.00. Listed here are the **FLOBs** for this issue. A list of all **FLOBs** to date is available upon request.

A Note on Using FLOBs

Some of the files on **FLOBs** have been compacted to allow us to put more on a **FLOB**. When you receive your **FLOB**, you will need to return these compacted files to their original form.

Which Files Have Been Compacted?

If a file name ends with "LBR", it is a library. A library is a file that contains a number of related files (e.g., one file might be a program, another file might be the documentation for the program). To use these files you must extract them from the library with a library-management program like NULU, which is available on **FLOB #3301**.

If a file name has a "Q" in the middle of its three-letter extension (e.g., WORDSTAR.DQC), the file has been squeezed. Many programs will unsqueeze files, NSweep is a popular one.

If a file name has a "Z" in the middle of its three-letter extension (e.g., WORDSTAR.DZC), the file has been crunched. CRUNCH and UNCR are available on **FLOB #3605**.

For more information on using **FLOBs**, see **MOR** Vol. 3, #3, p. 55.

Prod.#3601 — FLOB/DEC86 Disk #1:

AIM.LBR	Automatic Investment Manager — a simple financial program.
LTRI.LBR	Long Term Risk Investment — helps calculate your investments.
SCLOAN.LBR	Calculate loan payments, interest in

WORDPRO1.LBR	SuperCalc. Another new PD wordprocessor.
TXT42.LBR	Convert test files to executable .COM files; great for use with SUBMIT.

Prod.#3602 — FLOB/DEC86 Disk #2:

RCPM0986.WZ	List of remote BBS/CPM systems around the country as of September 1986.
SFILE31.LBR	Update to SFILE, a file search utility which allows named directories; this version searches .ARC files.
DNDMR.LBR	Great Dungeons & Dragons video/maze game.

Prod. #3603 — FLOB/DEC86 Disk #3:

BACKGAM.COM	A really nice backgammon game — full screen display.
CHICKEN.LBR	Arcade style video game — requires two players.
SD117.LBR	Latest update to the best directory program available.

Prod.#3604 — FLOB/DEC86 Disk #4:

ARCOPY.LBR	Allow access to, making of .ARC-style file archives (like libraries). Written by Dave Rand of NSweep fame.
UNARC12.LBR	Allows access to files within IBM-PC-type archive files.

Prod. #3605 — FLOB/DEC86 Disk #5:

SAP50.LBR	Update to Sort-And-Pack, a disk-directory cleanup utility.
CRUNCH20.LBR	Makes, types, and uncrunches crunched files; like SQ/UNSQ squeezed files, but crunching uses better space-saving algorithm.
ALMAZAR.LBR	An Adventure game written in MBASIC from Australia; lets you see how to program an adventure game.

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A resource to help make your Morrow really useful

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Morrow Owners' Review

Two-Column Printing

The easy way to do it with WordStar/NewWord

by Wallace B. Riley

You can easily print two-column material with a fully-computerized technique that uses WordStar's column-move mode. [WordStar vers. 3.0 or later and NewWord vers. 2.0 or later have column-move. —Ed.] The text must have been fully edited and ready to print before undertaking this layout, because editing is difficult and inelegant afterward.

First, set the right margin (^Or) to a little less than half the width of the finished page. For WordStar's default page width of 65, a suitable setting is 30. Hyphen-help (^Oh) should be on, especially if the right margin setting is less than about 50. Reformat the entire document, which will appear to have twice the number of pages it will have when finished.

Then set the right margin to 65 and turn on the column-move mode (^Kn). If necessary, add spaces to the last line of the document to make it the same length as the longest line in the document. Block off all of page 2 with ^Kb and ^Kk (the end of the block must be at the end of the last line, not at the beginning of the following line, as it might be when you are not in column mode). Then set the cursor at column 36 at the top of page 1, and move the block (^Kv). A five-character space will appear between the two columns. For a wider or narrower space, set the cursor to the right or left of column 36 before the move. Then move the single-column page 3 into the left side of page 2, which is now blank, and the single-column page 4 into the right side of page 2. Similarly move the single-column pages 5

and 6 to page 3, single-column pages 7 and 8 to page 4, and so on.

For layouts of more than two columns, or for page widths of other than the default 65, use a similar procedure. For N columns, divide the page width in characters by N and subtract 2 or 3 from the result to obtain the right margin setting before reformatting. Then after reformatting, move the first N single-column pages to their appropriate places on page 1, the next N pages to page 2, and so on.

This technique has two traps for the unwary, but they are easily avoided. First, when you move a block that is the full width of a page in column-move mode, you inevitably leave behind a string of carriage returns. Thus, when you have finished laying out your entire article in two-column format, it still has twice as many pages as it should have, but the second half is all blank, consisting only of a long string of <CR>s. These are easily removed—just block them off and type ^Ky—but if you forget, and go to the end of the file, you may think you have been transported to the middle of the Sahara desert. Nothing is visible for miles. This is especially disconcerting if your document is long. If you print the document without removing this "tail," your printer churns out a series of blank pages at the end.

The second trap is trickier. If your text has any underlined or boldfaced phrases of more than one word, and if these phrases wrap around from one line to the next, you will have to turn off the underline or boldface at the end of the line and turn it on again at the beginning of the next line. This is necessary because WordStar doesn't know anything about two-column format. It thinks you are moving text around just for fun. When you print the two-

Continued on p. 49

Wallace B. Riley is a technical writing consultant in San Francisco. He has been involved with computers for 30 years and with technical editorial matters for more than 20 years.

Continuous Underlining

It can be easier than you thought with NewWord's Find-and-Replace

by Jack Owen Jardine

I often deal with book-length manuscripts and other material that frequently has long passages destined to be typeset in italics, but which in the typescript must be underlined.

NewWord vers. 1.19 (which came with my MD3 when I bought it in 1983) meets this need nicely once you outwit its one glaring default: *It underlines the words but leaves the spaces blank.*

You have to fill in the blanks as you type, or go back and fill them in later.

Typing an underscore instead of a space between each word as you're entering text is dreadfully awkward, and the sort of challenge I no longer set my fingers to learn. My *NewWord User's Guide* sidesteps the issue by advising me that my work will look more professional if I underline sparingly.

Thanks a bunch.

I contend that when the spaces are not underlined, the visual effect is choppy, while continuous underlining invites the reader's eye to hurtle along at full speed.

I am quite willing to concede that this may be a visual preference left over from when the only way I knew to underline was after I'd typed the passage, a line at a time, by holding the underscore key down on the Correcting Selectric. That's not the point. I figure if my eye is happier with the continuous line, enough editors will be lulled into a buying mood by such a device to make it worth learning to do.

Jack Owen Jardine teaches community college writing courses, including one for writers using computers. His current projects include a master's thesis in psychology, a science fiction novel and a word processing/consulting practice, Words that Work.

It turned out to be easier than I thought.

Algorithm: Replace Blanks with Underlines.

To accomplish continuous underlining, first underline the text in NewWord's normal manner, inserting a ^PS before and after the target string:

This line is underlined, but not continuously.

Then go into Find-and-Replace with a ^QA, in order to replace each blank space with an underlined space. In response to the **Find?** prompt, enter two invisible characters: the blank space (<SPACE BAR>) and the <RETURN>. In response to the **Replace with?** prompt, enter an underscore (_) and a <RETURN>. The third cue is properly answered with RN (start at the cursor and replace without asking).

The results should look like this:

This line is underlined, continuously.

Note that the five spaces at the start are underlined, too. If I have more than two or three paragraphs of text like this, it's worth the keystrokes to go back into Find-and-Replace and replace each " " with five empty spaces (" ").

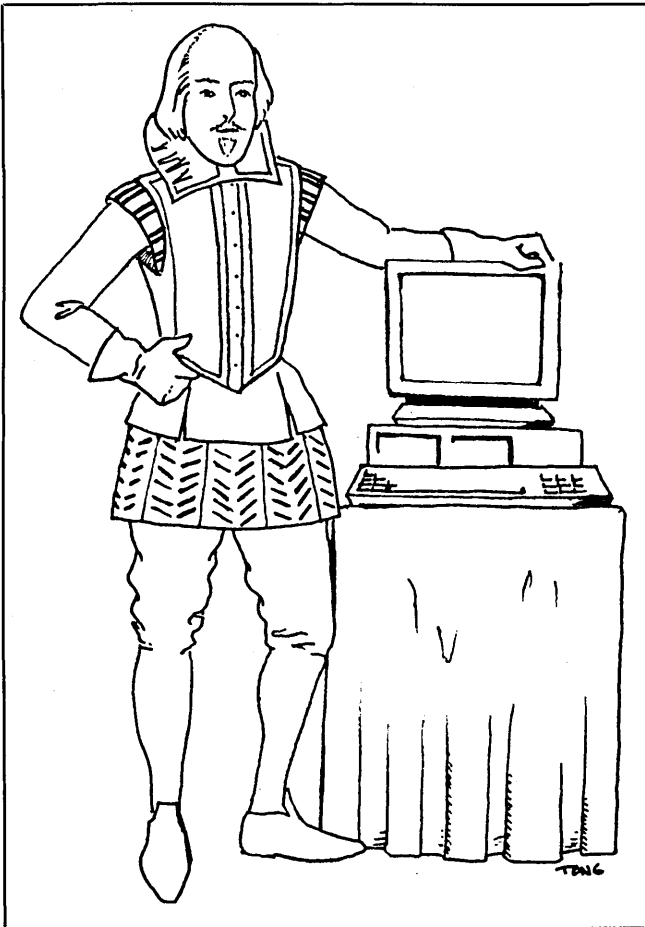
Where your underlined material consists of no more than one paragraph, that last move can be accomplished more elegantly if, when you replace the blank spaces with underlined spaces, you remember to put the cursor at the first letter of the passage, rather than at the beginning of the line.

A nice effect can be achieved by leaving the blanks blank between sentences within paragraphs. For this, **Find** ". "; **Replace with** ". ".

WordStar vs. NewWord

WordStar permits control characters and wild cards in the Find string; NewWord doesn't. Ask WordStar to find ^A ^A (control-A<SPACE>control-A) and it finds only those spaces with letters around them, which speeds things up considerably.

WordStar lacks NewWord's R (Rest of File) command, but this does not mean it must always find and replace every occurrence of the target string in your document. Put



the cursor at the beginning of the section you want to process, do not use G as an option, and the program finds the next occurrence of a space. Tap your way through with ^L.

Similarly, if you start with the cursor at the tail end of an underlined section and use the B option, the program will search backward from the current cursor position. Again, tap through with ^L. In either event, use ^U to stop the replacement. Then cursor forward to the next place that needs fixing, enter ^QA, and in response to the Find, Replace and Options prompts, give it a ^R for each, which reactivates your previous parameters.

The Dangling Space Syndrome

The one remaining hitch is that if the target string is more than one line long, at its right-hand edge each line will now contain an underlined space inserted by Word Wrap. You can cure this before it happens by turning Word Wrap off before typing the lines to be underlined. ^OW toggles Word Wrap, but it has no effect on spaces that have already been inserted. When you type new material with Word Wrap off, the terminal beeps to warn you of the end of the line, and at this point you can remove the dangling space so it won't be replaced with an underline. The Dangling Space Syndrome may not be enough of an annoyance to you to warrant the extra time involved in taking it out. Even so, you'll probably want to tidy up the ends of the paragraphs if you're one of those typists whose right thumb automatically adds two spaces after every period.

The Post-Fix

After a document is entered, should you decide to go back and underline a few lines or even a few pages, simply mark each end of the target string with ^PS, then **Find** the blank space and **Replace** with the underlined space, as above. Then instead of RN, enter a simple R, whereupon the computer queries you each time it finds a blank space. At this point, Y=_, and you fill in the blanks as fast as you can tap the Y key, avoiding the dangling spaces at the ends of the lines as you encounter them.

If you want everything on full automatic, use the RN command, watch the replacements (they cycle through about as fast as I can read), and be ready to interrupt them with a ^U. If you just let Find-and-Replace go, it will replace *every* blank in your document with an underline, and you'll have to re-replace the surplus underlines. This is time-consuming.

^U interrupts the process but doesn't abandon what it has accomplished in the meantime.

Final caution: Do all the tinkering with content *before* filling in the blanks, because NewWord thinks any string of characters that is uninterrupted by spaces is a single word, and it won't reformat such paragraphs.

There is an alternative to all of the above. Get a copy of NewWord vers. 2.2, rev. 3.1 or later. (Since MicroPro just bought NewStar's entire product line—including NewWord—as NewStar goes out of business, you'll have to get it from MicroPro.) In this, continuous underlining is accomplished automatically with dot command toggles: specifically, .ul on and .ul off. Underlined paragraphs reformat beautifully. You don't have to deal with the dangling space syndrome, either. ■

A Homegrown Portable MD11

An interview with Bill Smith, maker of the MD11-P Plus

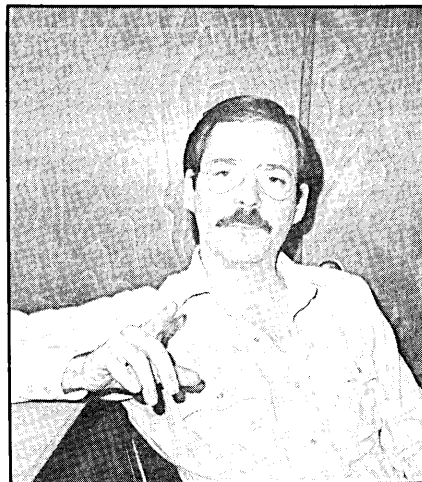
by Sypko Andreae

MOR: Bill, how did you get interested in making the MD11-P Plus?

Smith: When I was working at Morrow in 1983, my job was to write the BIOS for the MD11. The original prototype of the MD11 was given to me so I could develop the software for it. And I fell in love with it. I had been using one of their S100-based machines that had a hard disk on it for software development. Then when I got my hands on this MD11, it was like dying and going to heaven—it was so incredible, so much faster than the older machines.

Q: What operating system were you using on the MD11?

A: I started out with CP/M 2.2. Then I made CP/M Plus run under CP/M 2.2, just tagging onto CP/M 2.2's BIOS. That was a fun little project that took about an evening. The difference between CP/M 2.2 and CP/M Plus was really remarkable. The MD11 I used at that time did not have a hard disk yet, just two floppies. I did some benchmark speed tests on this floppy-equipped MD11 and the hard



MD11-P inventor Bill Smith.

disk-equipped, S100-based Morrow machine (the DS-1). The test program opened a large number of files simultaneously. Well, the MD11 prototype won out easily over the DS-1, even though the DS-1 had a hard disk and the MD11 prototype did not. The MD11 uses most of the memory space between 64KB and 128KB as a disk cache buffer; that's what did it. It was a great design.

A few weeks after Morrow introduced the MD11, the MD3-P was introduced. This portable version of the MD3 was put in the field to go up

against the Kaypro machine. The packaging of the MD3-P was rather primitive; it was very difficult to build.

Q: When was that?

A: That was about Christmas 1983. Around that time the half-height hard disk was becoming available, and Morrow had six of them. At that time I had decided to return to my previous job in Santa Clara and left Morrow. So the three major ingredients were there: a high performance micro-computer that can run a hard disk, a half-height hard disk, and a portable case to put it in. The ultimate thing for the guy who travels with his micro.

Q: The Kaypro people came out with the Kaypro-10 hard disk machine a little later. They had a lot of trouble with it. Rumors had it that hard disks were not sturdy enough yet to withstand the shocks of use in a portable. Do you agree?

A: The specifications for Shugart's SA-712 half-height hard disk say that it is ruggedized to withstand 30Gs

when it is turned off and 1G when it is turned on. So I was not concerned about that. Moreover, it is equipped with a "landing zone," somewhere on track 353, where you can "park" the read/write head while it spins down and stops flying. I believe this disk has 320 usable tracks. It also has a head-lock, which keeps the head in place after the power is turned off so it doesn't rattle around.

Q: When did you build your first MD11-P, and what troubles did you have?

A: I built it in January 1984, and I have been carrying it around ever since without the slightest trouble. Well, not quite. I have a little trouble right now with the power supply that's gotten down to 4.8 volts at the main PC board and down to 4.5 volts on the co-processor board.

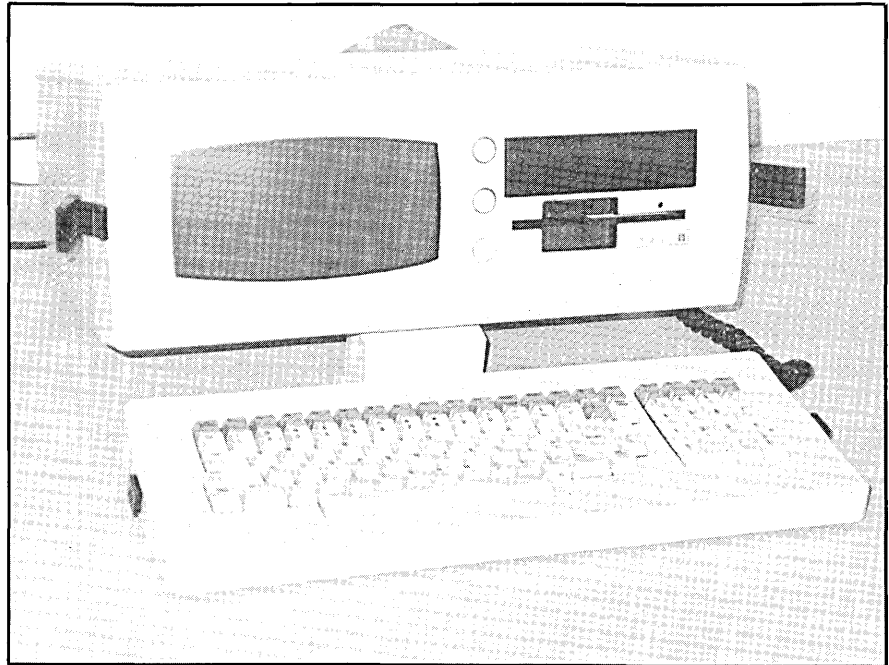
Q: You also added a co-processor board?

A: Yes, that is why I call it an MD11-P Plus. I'll tell you about that in a minute. Anyway, the SA-712s worked out real fine; I don't know if they are still being made. I have a handful right there on the table. Great drives, gave me less trouble than several brands of floppy drives.

Q: The MD3-P was sold with at least two differently designed cases.

A: That's right. What you see here is the second model. I had to do some milling to get the hard disk in place and to set it—and the floppy drive—back a little bit. Otherwise you can't close the keyboard lid. Before I found that out, I was forced to use a Toshiba floppy drive, which has a little flat door instead of a handle sticking out.

Q: Did you have to make any other significant modifications to the MD3-



P frame to make it work for the MD11-P Plus?

A: The original machine had a wire frame inside and it had metal skins on the inside of the case to shield it from radio interference. It was very difficult to package; things were extremely tight. It had a rear plate that was too thin, just 1/16th of an inch thick. The carrying handle for the complete MD3-P is mounted on that thin plate, and if you lift the MD3-P up a bit too forcefully, the rear plate flexes and threatens to burst open the plastic case. That is why I machined a new rear plate, which is 1/8th of an inch thick and made of rigid aluminum. It is perfect now.

Q: Did the plastic case suffer from opening it up so many times?

A: I have opened and closed it at least 30 times, and it is getting to a place where perhaps a little Velcro strip is called for. Well, no computer is really perfect. When you want a portable hard disk machine, you don't really have all that many choices about how to make it. But this is the best set of com-

promises I have found.

Q: What are you using your MD11-P Plus for?

A: I am a programmer by trade, so I use text editors a lot. I've gotten so used to WordStar that I am still using it. You see, when you are a fast typist, you want your fingers on the keyboard where they are supposed to be and not somewhere over the function keys. So I don't use the function keys while I am editing, and WordStar allows me to do that. I like using the control key. I have tweaked up my WordStar so it is real fast. This system outperforms everything I have seen except maybe an IBM PC-AT with a lot of memory, but that is in a much higher price range, which I decided I couldn't afford.

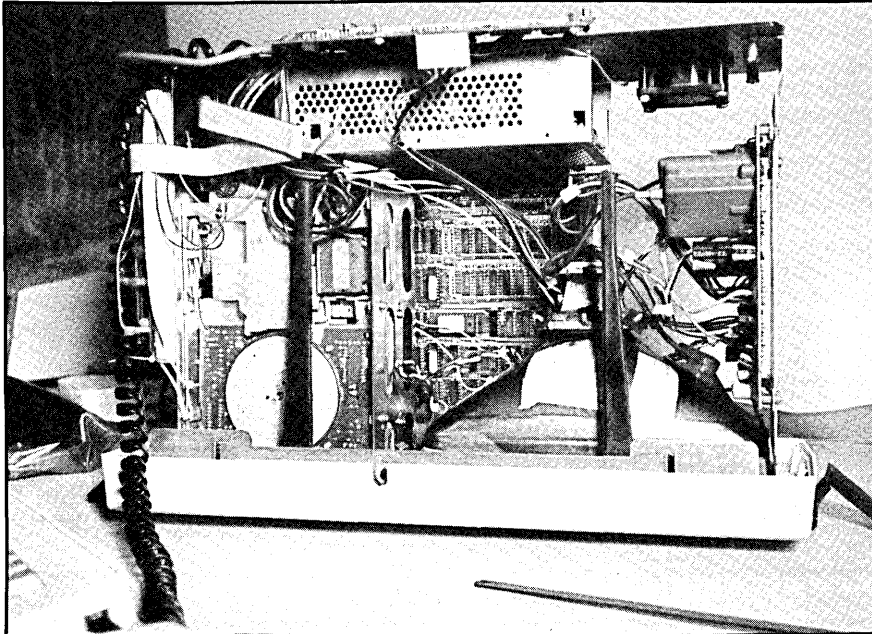
Q: Did you build the co-processor board in right away?

A: No, no. This was built before the co-processor board was even developed by SWP. [See articles in MOR Vol. 2, #6, pp. 8-12. —Ed.] But let me tell you how I got the parts together to build the first MD11-P. I had to buy a

complete MD11 from Morrow at retail price. Yes, I paid \$2,995 for that thing. I also "borrowed" an MD3-P. Over the weekend, I took it all apart and made the first MD11-P. From the left-over parts I made a complete MD3, which went back to Morrow

to the new style and I could not get cases for any more MD11-Ps, so I had to drop the project for a while. My friend still uses that original MD11 desktop.

When Morrow went bankrupt, I got wind about leftover MD3-P parts



MD11-P Plus with the video logic board removed. The ribbon cable in the top left runs to the co-processor, which is mounted with wire ties on the left side.

right after that weekend, where it was re-labeled and shipped. Then it took me every evening over the next week to cut and try before I could make the MD11-P fit. Finally, I turned it on and it ran fine right away. But after a while it began to get heat problems. Not enough fan power. Later, when I rebuilt the case I also put a second fan in. The first fan blows air in, right at the hard disk; the second one sucks the air out.

Q: You just intended to make an MD11-P for your own use?

A: That's right, that's all I had in mind. But I had a friend in Santa Clara whom I showed my machine to. He liked it so much that he wanted one for himself right away. But then Morrow changed the design of the MD3-P cases

laying around. So I started gathering parts again and, as you can see, I have enough to make another six, maybe 12 MD11-Ps.

Q: What motivates you to built more MD11-Ps?

A: Well, I must be crazy or something, but isn't it a lovely machine? I also do it to satisfy an old desire, frustrated nearly three years ago. You see, right after I built my MD11-P, I brought it in and showed it to everyone at Morrow. Most of them said, "Gee, that is a real neat idea. When we get around to it some day we should look into it again...." Even George Morrow did not go for the idea. He had already had so much trouble with the MD3-P that he didn't want to go through all that with an MD11-P

again. I could not understand why they didn't go crazy about it.

Q: Wasn't that when Morrow ran into a lot of trouble with the MD11?

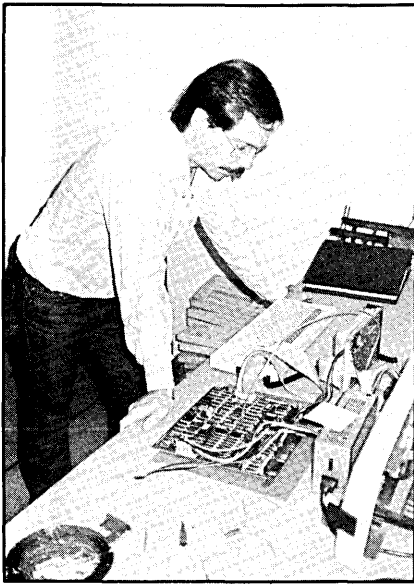
A: Yes, I received many software revisions through mid-1984. Anyway, things worked out after a while. But they never showed any interest in a portable MD11 again. George must have had some faith in the portable market, because, soon after, plans for the Pivot were made.

Why do I want to built more MD11-Ps? There is really no rational justification for building any of these. It is my belief, though, that CP/M still has merit, in spite of the fact that there is tons of MS-DOS stuff out there. CP/M is simply a conveniently small and very high performance operating system, and I like it just fine. It serves my needs perfectly well. I suspect there are some other people who feel the same. And the MD11 is the fastest CP/M machine ever built. Period. Making it portable just makes it that much more fun to use.

Q: What about the small screen size compared to a desktop MD11 with an MT70 terminal?

A: It does not bother me a bit, and I'll tell you why. I used to have a machine with a 66-line screen, 80 chracters per line. That was really nice. Lines were vertically compressed the same way as on the MD3-P. I was already used to that and could read the screen easily from five feet away. In fact, the characters displayed on so-called normal screens look too tall and stretched out to me.

Q: What about CP/M 3.0 versus CP/M 2.2? I once heard George Morrow say that he was a bit disappointed with CP/M 3.0 after all it was piped up to be. Now there is ZCPR3, which Ted Silveira has said is what CP/M 3.0 should have been, but



never was.

A: First off, I don't know what ZCPR3 is. [*What?! —Ed.*] Then I don't know what George was led to believe. I find CP/M 3.0—or CP/M Plus as it was called initially—just delightful. It is very fast, and it has some of the features that MS-DOS users have come to appreciate. For instance, you have a startup file PROFILE.SUB, which exists under MS-DOS as AUTOEXEC.BAT. Right after boot-up you can automatically load your KEY files, send initializing commands to terminal and printer, start a clock, or do whatever you want. In addition, anyone who is used to CP/M 2.2 can learn CP/M 3.0 really quickly. It is easier in some ways.

Q: Somewhere along the road you decided to add a co-processor to the MD11-P. Was that because you wanted to develop MS-DOS software on your machine?

A: Yes, I do some of that. And it is nice to be able to run a few simple MS-DOS programs on the '11. I am close to having WordStar running under MS-DOS, not that I really care because I still use ED. Many people feel that ED is a terrible editor, but it

can do lots of neat things that newer editors can't do so easily, like extracting comment lines out of source code. In ED you can write a Macro to do all that automatically.

I put the co-processor in when Silicon Valley Surplus first had them. It was a matter of going over there and plugging in board after board until I found a co-processor that worked. The only problem I ever had with the co-processor was heat. Before I had the extra fan in, when I wanted to use MS-DOS I just peeled the case off, plugged the co-processor in and went to work. I must have left the MD11-P open for six weeks or so. Then one day I got really motivated to tidy things up. That is when I installed the co-processor board properly, the way you see it now, and I also installed the extra fan. The co-processor board is hung up on a strap with wire ties. If you take this screw out, the whole co-processor board folds out. The way it is mounted it gets a lot of airflow. You see the cable running between the co-processor board and the little extender board? That little board is connected to the 40-pin header connector, which gives you all the Z80 signals you need.

Q: What are some important limitations of this co-processor?

A: Well, to make it really useful you would have to rewrite the BIOS on it to map video RAM to the screen and you would need more memory. But for simple, small applications it is all right.

Q: How did you fit the half-height hard disk in there?

A: That was not so easy. There is an extra ribbon cable to deal with. And you have to set the hard disk back a little bit so it does not conflict with the keyboard cover, just as with the floppy.

Q: I'm sure some people might like this MD11-P, Plus or no Plus. What is keeping you from building some now and selling them?

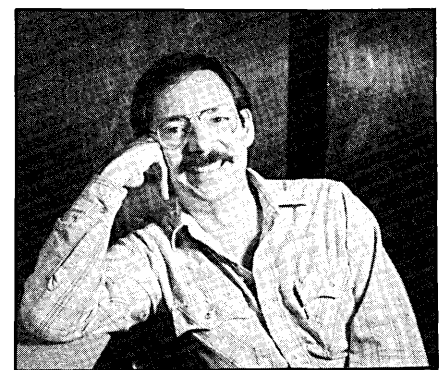
A: Right now the power supplies are hard to get. And I would have to machine some more rear panels. I have most of everything else. Then I just need some time, but I am less encumbered by work at the moment, so that's all right.

But I am also thinking about some more features. Wouldn't be nice to have a connector brought out for an external Winchester disk, for instance? I have that 40-Meg Winchester disk lying around. If I could get it to work, that would be a just delightful addition. Carry 10 Meg around, plug in another 40 Meg when I get home.

Another thing I have to figure out is how to fold all those cables so the airflow is still sufficient. The co-processor adds a lot to the cabling; without it, packaging is a relatively easy job.

Q: How are you going about marketing?

A: I have no idea. In fact, I could care less. Word of mouth, I suppose. It



would really be fun to take my idea of the MD11 portable and see a handful of them made. If nobody ever buys them—well, so what? I could give 'em away as gifts if I choose to. It is really the fun of doing it. And the thrill of seeing some of these really outrageous

machines go out into the world. They *are* really outrageous, you know. I have shown this machine to professionals who have their IBM PCs and things like that. There is hardly anything that can keep up with the MD11-P; it is really fast.

Q: Would you consider giving one as a Christmas present to George Morrow?

A: Hey, that would be fun. Wonder if he carries a Pivot around? When I got wind, years ago, about how George conceived of the disk controller for the MD11, I wanted to be associated with that project. If anyone could be king of disk controllers, it is him. I suspect he is as much of a performance junky as I am. He would not be satisfied with the Pivot I think. He would love the MD11-P. Even at twice the weight.

Q: Will you tell *MOR* when you have some available for sale?

A: Sure. Word of mouth would be good enough, don't you think? ■

Copyright Caveat

by Donald W. Marken

I would like to add a caveat to "Of Copyrights and Public Domain" (*MOR* Vol. 3, #1, p. 16). In his article, Bill Steele correctly states that if a copyright notice is not of the correct form, it may injure the author's rights. However, he also says that "On a typewriter or computer screen, a 'c' in parentheses seems to be acceptable" as a copyright notice.

It should be noted that the Copyright Act requires either the copyright symbol (the letter "C" in a circle) or the word "Copyright" or the abbreviation "Copr."

An article by L.J. Kuttan entitled, "'(C)' as an Invalid Notice of Copyright" (*Computer Shopper*, March 1986, p. 174) argues that, despite their acceptability to the Copyright Office, variations such as "(C)" and "(c)"—if used alone without the word "Copyright"—make a copyright notice potentially defective. They do not meet the exact requirements of the Act, and the Copyright Office has no legal authority to accept anything other than the statutory requirements. ■

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by Sypko Andreae

Remember when we promised you a *MOR* BBS (Bulletin Board System) some hundred days ago? Well, our newest subscriber service is finally on the air. In case you don't know, a BBS is an electronic mail system that runs on a computer connected to a modem connected to the phone. If you have a computer with a suitable modem program and a modem (and a phone!), then you can call in to learn what goes on. The news is contained in public messages, news bulletins, or private messages just for you. You can find out who the regular callers are on a BBS, leave messages yourself, upload or download files, give or get help, make friends and have fun.

Why Should There Be a *MOR* BBS?

We need one to distribute news fast, to have up-to-date information on-line (repair services, supplies), to have people help each other with problems, to get *MOR* authors and the *MOR* editor in touch (so much better than playing phone tag), to upload articles, to leave messages for the subscription coordinator, to place mail orders, and, at a later date, to download software. The five part-time members of the *MOR* staff use electronic mail heavily, and they will also be using the *MOR* BBS for their inter-office mail.

How the *MOR* BBS Works

The software used by the *MOR* BBS is called PBBS, probably after its author, Russ Pencin. We chose this software because it does a lot of maintenance automatically, governed by rules set up in advance, which relieves us from a lot of tedious maintenance chores.

A BBS, once set up, can't be left to itself or its message files will overgrow and the users' file will clog up. This is why it needs maintenance. It used to be that the SYSOP had to do that. What is a SYSOP? It is the SYStems OPerator, the person responsible for running the BBS, overseeing the traffic, doing a bit of maintenance, helping people on board and giving them the proper access level.

Your access level is the key to the number of privileges you enjoy on a BBS. When you first call in, you get level 2 access; i.e., you can read messages but you cannot yet leave messages, and you can get access to CP/M but you can't up- or download any files yet. You earn more privileges when your access level rises, which, in turn, happens when you call in often: It is as if PBBS slowly gets to know you, decides you are serious about it and rewards you by raising your level.

Of course, this process can take many days, besides it will stop raising your level when you have reached 5, where you can do everything except up- and downloading. Then it's time to get the attention of the SYSOP and ask him to be raised one more notch to level 6. The SYSOP checks to see if you are a subscriber and will grant you level 6 if you are. If you are not, a \$25 check to *MOR* will get you level 6 access for a year. Now you have full access.

Things that Go *Bump* in the Night

PBBS uses a fascinating scheme to maintain itself. Every night at the stroke of midnight it checks to see if there is anybody on-line. If there is, it waits for the caller to log off, then tells the BBS modem to take the phone off the hook (electronically) so the BBS will look busy. Then it

Calling up and Logging on

BYE510 (c) - any key to continue:

OK, let's move on. The next screen display should make it clear that you called the correct number, and from then on you just answer the questions put to you. (Don't despair if you don't know how many nulls you need; you almost assuredly need none.)

[illegible]

Enter your FIRST & LAST names:
NOVICE CALLER <<--

City St. are you calling from?

LAKE WOBEGONE, MN <<--

The BBS now vaguely knows who you are, and it invites you in. Menus will suggest to you what to do next. The main menu looks like this:

[N] News files	[W] What's new on system
[M] Read mail*	[U] User list
[S] Statistics	[L] List logons
[Y] Yak with Sysop	[F] Note to SYSOP
[X] Xpert Mode toggle	
[J] Jump to CP/M	[Q] Goodbye/logoff
[?] Display menu once	

Novice Caller
The PBBS commands are:
B,N,W,M,S,U,L,Y,F,J,Q,X or ?

If you are a new caller, it's a good idea to try the Bulletin and News files. These will give you a good idea of the scope of the *MOR* BBS. Other than that, you are invited to poke around until your time limit expires. When that happens, if you don't go away the BBS will give you a hand. If you are a long distance caller, you would do well to capture all that flies by on the screen in a special file for a later, much more relaxed, perusal off-line.

Message Privacy and Message Folders

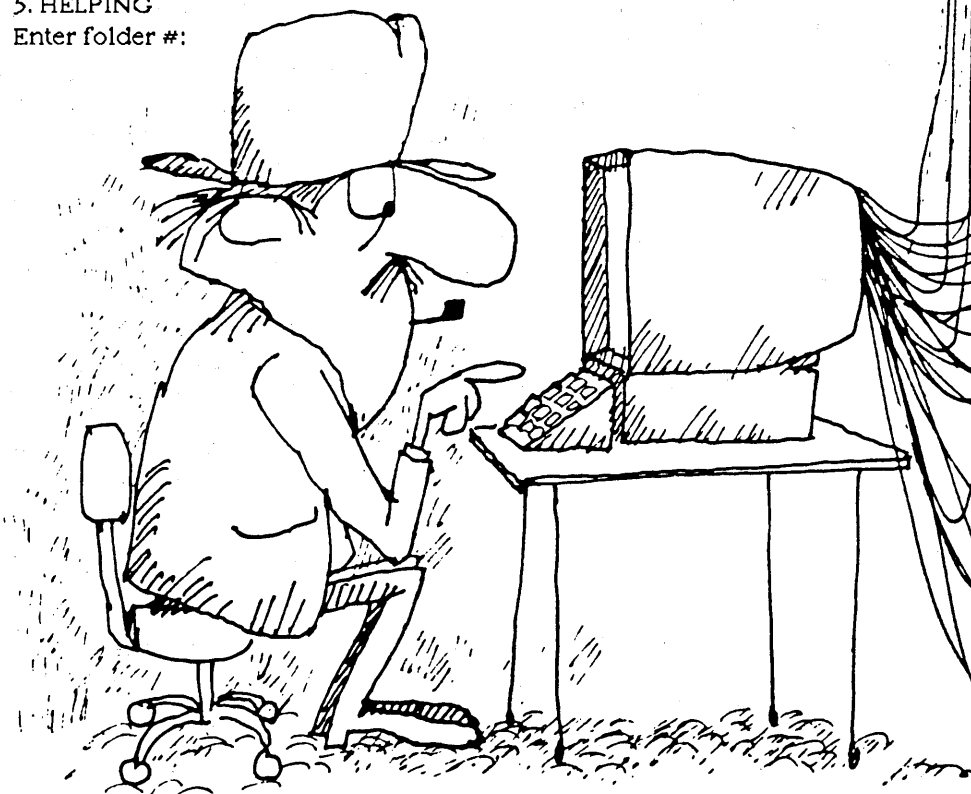
Once you are able to leave messages, you can choose to make them private or public. If a message is private, then only the named addressee can read it; if it is public, everybody can. The SYSOP, of course, can read everything, but it is unlikely that he has the time to do so, even if he has the inclination.

The *MOR* PBBS has message folders. Say you have treaded your way from the main menu to the mail menu and you have been able to write a message. When you are done writing, it it needs to be "saved" and the system will ask you what folder it should be saved in:

Select a folder from the following list:

1. GENERAL
2. SUBSCRIBER
3. MAILORDER
4. MOR EDITOR
5. HELPING

Enter folder #:



If you don't know what to choose, select "1." If you have messages for the *MOR* staff, it behooves you to drop them in the appropriate folders in order to get their attention quickly. This is what the folders are for:

<u>FOLDER</u>	<u>TO WHOM</u>	<u>MATTER AT HAND</u>
2. SUBSCRIBER	SUB SCRIBER	Change of addresses, mail problems, renewals
3. MAILORDER	MAIL ORDER	Purchase of manuals, ROMs, PD software disks
4. MOR EDITOR	MOR EDITOR	Submitted articles, letters to the editor
5. HELPING	[all]	You have a problem and need help, or you know a solution and want to help out

Under "TO WHOM," you should always enter a first and last name. But if you had already answered "YES" to the question "To everybody?" the query "TO WHOM" doesn't appear anymore.

The folder system helps sort messages out and makes it a bit easier on the *MOR* staff. Some people feel that the message folder system is too constricting. Will you only be able to read the messages within a certain folder? No, only when you choose to do so. If you don't, you will be in "Global folder mode," meaning you can read all the public messages and all messages addressed to you, no matter what folder they happen to be in.

If you are submitting an article by uploading it, be sure to also leave a message to MOR EDITOR with the file name you are using so we don't have to search for a needle in the haystack.

If you are placing a mail order, be careful about leaving a credit card number in your message. What if, by mistake, you fail to make it a private message?

Where Is the Free Public Domain Software?

The *MOR* BBS has an RCP/M, i.e., the remote CP/M feature, which allows you to give commands to the BBS at its A>. If you have attained level 6, you can upload and download files, as is explained in one of the News files. But there will be very little in the way of public domain software available for a while. The *MOR* BBS runs on an MD5, and there is only enough space on the disk to run it

as a message system. Sometime soon we will install an additional 16-Meg disk, and then there will be a lot of downloadable software, including all the files from the Floppies of the Bimonth and, of course, your own contributions.

Another project in the planning stages involves the installation of special-purposes data bases, accessible remotely and containing up-to-date information on repair facilities, supplies, *MOR* authors and an index of *MOR* articles.

Where PBBSs Bloom

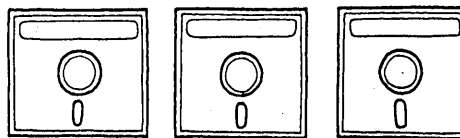
Quite a few BBSs using PBBS software have emerged in the San Francisco Bay Area and beyond. I'll list five that are Morrow-oriented:

BAMDUA	415/654-3882
Morrow Owners' Review	415/654-3798
Silicon Valley Surplus	415/261-4513
Tony Adams	415/845-2164
Werner Gumpert	415/938-9470

They all operate 24 hours a day and can handle 300, 1200 and 2400 baud. All of this would not have come about if it were not for the splendid efforts of Russ Pencin, the author of PBBS, and of CP/M giants like Wayne Masters and Irv Hoff. It is not so easy to get a BBS properly installed, and abundant credit should be given to *MOR* staffer Steven Wartofsky for his most dedicated efforts—all during his own free time—to bring the first three BBSs listed above alive. Call in and give him a hand!

If you want to learn more about modems and bulletin board systems read *MOR* Vol. 2, #3. If you don't have a modem yet, now is a good time to buy one. New 1200-baud modems can be bought for about \$100. For a good cheap modem program, get one of the FEB86 Floppies of the Bimonth (*MOR* product numbers 3105 and 3106, \$8 each), containing either MEX and IMP, the two most popular programs.

In conclusion: Try the *MOR* BBS. It will make your computer a lot more useful, and it can be a lot of fun to join a global village like this. ■



The Z-System and Mini-Winnie Hard Disk

An unending source of delight

by Rick Charnes

In response to the special deal MOR has just made to license copies of a "bootable ZCPR3/Z-System disk" for Morrow computers and the discount on the Mini-Winnie hard disk that you receive when you buy MOR's Z-System disk, I would like to share some of my own experiences with this dynamic duo in hopes of conveying just a little bit of the extraordinary nature of this new computing experience.

For the last four months I have been using a combination of a Mini-Winnie hard disk and Z-System, the replacement operating system from Echelon Inc. that is taking the 8-bit world by storm. Quite simply, it has been the most enjoyable and pleasurable experience I have had in my 2-1/2 years of computing, and I would recommend without reservation this combination to anyone who is interested in taking advantage of the fullest power of our Morrow computers and in using the most advanced operating environ-

ment available on our sturdy machines. Its elegance, sophistication, flexibility and number of features make anything else pale in comparison.

About six months ago I had an important decision to make. I was at a crossroads in my computing. Initially attracted to computing for its ability to help me with my writing, I was beginning to use my MD2-1/2 (pet phrase for a double-sided MD2) less as a *tool* and more as something enjoyable *in itself*, something to experiment with, learn about, explore. Starting with the extraordinary MEX-Plus modem program—the commercial version of MEX—I got my feet wet and began doing some easy and simple programming, writing beautiful and fancy menu displays for myself and learning to master the amazing and complex interfaces between a computer bulletin board and my own computer. Being practically a language in itself, MEXPlus affords the beginning programmer and modem aficionado the perfect opportunity to test his or her mettle in an interactive environment.

But all this had one side effect: After a typically heavy session of making sure that the proper parameter was correctly stored to the right string variable, the number of floppy disks

on which resided all the auxiliary programs I was using started making my desk look like the day after an amateur Frisbee tournament. I was beginning to accumulate programs the way I used to collect stamps when I was a kid, with one exception: My stamp albums were expandable.

All the MS-DOS propaganda was beginning to get to me, too. As a radical at heart, I don't really buy the pro-CP/M argument that says, "If you've got something that works, why change?" I was getting restless. The "Why change?" argument is fine for folks for whom *application* is more important than process, but I was rapidly moving away from that world. And my friend with an MS-DOS business was hot on my heels to get me a IBM clone "cheap."

Then I happened to read Ted Silveira's series of articles in *BayArea Computer Currents* (available on FLOB/OCT86, #1) about an operating system and environment called Z-System. At first not really understanding it fully, I was nevertheless extremely intrigued. I had heard of ZCPR3 (one component of a full Z-System) before, but had always assumed it was for folks on a higher technical plane than myself and,

Rick Charnes is a librarian temporarily turned word processor. He originally bought his Morrow to help him write political articles but has since become enamored of computer telecommunications and, of course, ZCPR3.

furthermore, that it needed to run on a hard disk. But Ted explained that he had been running it on his floppy-based MD3 for quite some time.

I started looking around and investigating. There is a non-commercial version of ZCPR3 for Morrow computers travelling through the bulletin board circuit. Considering the amount of courage it took me to install ZCPR1 on my system a year or more ago (which turned out to be incredibly easy), I was initially quite hesitant. After a few false starts, however, I found installing it to be not at all past my level of expertise and soon found myself running ZCPR3 for most of my day-to-day operations.

What Is ZCPR3? Why Use It?

"Z-System" is a full replacement operating system for CP/M computers—complete with a new BDOS, called ZRDOS—whereas ZCPR3, for "Z80 Command Processor Replacement version 3," replaces only your CP/M "command processor," i.e., that part of your operating system that deals with what you type in from your keyboard. In any case, when you're running it, all of your old CP/M software runs fine, only better.

I found the new things I could do with my new system most exciting. It opened up a whole world to me, one that a blossoming but still new computer learner such as myself felt extremely happy to be in. The only other time I remember being so excited computer-wise was when I first discovered the wild and wonderful world of modeming.

I should first say, though, that ZCPR3 is not for everyone. Those who will enjoy it the most are those for whom the joy of experimentation and learning is important. Those who necessarily spend most of their time within a single application or program probably will not find it that useful. If

you're the kind of person, like myself, for whom your computer is a wonderful, magnificent toy, ZCPR3 can promise you rewards and magic the likes of which you've probably never before even imagined.

I ran ZCPR3 for about three months on my floppy-based MD3. But I was still engaged in the old debate: whether to stay with my Morrow and the CP/M-compatible world or to join the MS-DOS crowd. My experiences with ZCPR3 were having the effect of pushing me in the direction of the former, but that money I had saved was burning a hole in my pocket. Visions of 640K RAM had the impudence to remain dancing before my eyes. I also had my eye on a nice RAM-disk from Westwind. I was attracted to the idea of fast and—having recently gone through an ordeal with noisy disk drives that I wouldn't wish on my worst enemy—quiet computing. But then again, ZCPR3/Z-System cannot run on Westwind products. How devoted was I to my new operating system—would I sacrifice the advantages of a RAM-disk for it? It seemed that if I talked with three people I would get five different opinions of which option to choose.

Then I heard about the Mini-Winnie hard disk, which is now as I type receiving these words onto its commodious 20-megabyte storage space. The key to why it can run Z-System while other hard disk systems can't is simple: Other hard disk software locks you into its own modified operating system, while the Mini-Winnie leaves you with what you started with—pure CP/M Digital Research 2.2, from which you are then free to load Z-System or whatever CP/M-compatible environment you choose. At the present time, Z-System cannot be run from CP/M 3.0, which is used by many MD-HDs, although its creators are busy working on it.

The Mini-Winnie ("Winnie" stands for "Winchester," the generic name for

hard disks) is about the most inexpensive hard disk one can stick onto a Morrow, and from the several reviews I've read in addition to my own experience, the quality doesn't seem to suffer a bit. It appears to be a top-notch, well-made product. And it comes with one important extra, something that is on the rare side in the computer field: customer telephone service that just won't quit. If you have any doubts about there being friendly, courteous, helpful people in the computer world, the president of Advanced Concepts, Tony Nicotra, will disabuse you of any notions to the contrary. After reading a positive review of the Mini-Winnie in San Francisco's local computer magazine, I wrote Tony a rather long, 8- or 9-question letter outlining some of my admittedly rather arcane but to me important concerns. When I received a phone call three days later at 10:00 p.m. *Florida time* from Mr. Nicotra, who took a full 45 minutes with me to answer my questions and then some, the feeling started growing in me that buying a Mini-Winnie was something I wanted to do.

I had not previously heard of the Mini-Winnie, as most of their sales have previously been to the owners of other CP/M computers, but a growing number of satisfied Morrow users are now owners of this hard disk system; and Advanced Concepts is making special efforts to be available to our community. I heartily recommend this system to anyone looking for a hard disk add-on to their Morrow, and for those wanting to run Z-System as well, it is an indispensable piece of hardware.

For someone like myself who spent a year and a half doing nothing but using NewWord to write text on a single-sided MD2, the combination of these two has been a completely new experience, one which continues to give me much pleasure each time I use it. The sheer number of things one can do and the flexibility and ease with

which one can do them can pour fresh blood into even the most tired-of-CP/Mers.

Now that I have a hard disk, one of the really nice features of Z-System—and something I've now come to use daily—is opened up to me: its elegant and sophisticated menu system. Based

stroke. Seeing on your screen, displayed in front of you, an attractive menu of this sort that you have created for yourself through your own programming sweat and blood and pleasure—something that looks as good or better than any professionally-written, commercial program that

CP/M always needed some "prettying up." I have seen the beautiful graphics and art work done on other operating systems, and I have known that my Qume 102A terminal and most Morrow terminals are capable of much more attractive displays than they are usually given by application programs. Through Z-System's ECHO command, which sends control codes and escape characters as well as text directly to the console, I simply send my terminal's codes for reverse video, blink, dim, etc. This creates a friendly, personalized environment that adds a very nice touch and, for me, fills in something that I have long thought missing from most applications.

Almost all of your old CP/M programs can run without modification on Z-System. The bugaboo that has scared some people away from ZCPR3/Z-System—i.e., the transient program area that it takes from you for its own needs—seems to me greatly exaggerated. The programs I run daily—NewWord, dBase II, and MEX-Plus (which is much more memory-hungry than its public domain counterpart), along with the myriad of CP/M utilities I've used for years—all operate without any problems whatsoever.

It is, of course, most enjoyable on a hard disk. There are over 100 utilities that run only on ZCPR3, and it's very nice to have access to them. On the other hand, I used ZCPR3 for three months before getting my Mini-Winnie, I personally know several people in the Bay Area who do the same, and I know that one of the country's top ZCPR3 programmers operates from a floppy machine. The lack of a hard disk shouldn't deter anyone. *[For those who are interested in the Mini-Winnie, see "Important Announcements" on p. 4. —Ed.]*

What does one get on the bootable Z-System disk distributed by MOR that is not available on the non-commercial ZCPR3? Well, for one thing, it's about a thousand times easier to install. Basically, one

Continued on p. 48



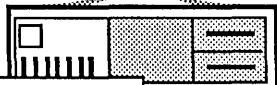
on a demo menu available on BBSs, I have created my own personal series of visually pleasing menus, complete with reverse video, blinking prompts, and dim and normal text from which I can do practically any task I frequently use, occasionally use, never use, or can't even dream of ever using but like to have there for the sheer fun of it—simply by pressing a single key-

probably can't do half the things it does—is a very satisfying feeling. I have had MS-DOS-using friends over at my house watching these menus in action who have exclaimed that they wish they could do something like this.

I have paid special attention to and received special enjoyment from these menus, as I have long thought that

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REVIEWS

HARDWARE REVIEW

PRODUCT: **Mini-Winnie Hard Disk**

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& Consulting
8926 S.W. 17th Street
Boca Raton, FL 33433
305/482-7302

TESTED ON: MD3

PRICE: \$465-\$845, depending on size

[Editor's Note: Advanced Concepts is offering a special price on their Mini-Winnies to readers of MOR. See the "Important Announcements" on page 4 of this issue for details.]

by **Ted Silveira**

Curing the Floppy Shuffle

Is there a floppy disk user alive who doesn't occasionally long for a hard disk, something huge and fast to cure the floppy shuffle? And is there a CP/M user anywhere who hasn't watched with envy and frustration as hard disk prices for IBM-compatibles dropped down and down and down—\$1,200, \$800, \$400—while the price of CP/M hard disks stayed nailed at \$1,500?

Well, things are looking up for the CP/M user. The price of hard disks for CP/M is dropping, not to the garage sale prices of IBM-compatible hard disks perhaps, but to discount store prices at least. If you thought a hard disk was out of your range before, it's time to reconsider, thanks to Advanced Concepts Engineering and Consulting of Florida.

The Mini-Winnie

The Mini-Winnie hard disk kit from Advanced Concepts is available for many CP/M computers, including Morrow MD2 and MD3, all Kaypros, Osborne O1, Xerox 820 I and II, Zorba, Sanyo (MBC1150/1160), Micro Mint SB-180, AVL Eagle, Alspa II, Epson QX-10, and others. Prices for

the standard external installation kit are \$465 with a 5-megabyte drive, \$665 for 10 megabytes, and \$790 for 20 megabytes (discounts start with quantity 2).

This standard kit is complete, consisting of the hard disk, already mounted in a cabinet with a power supply and fan, the hard disk controller board, various cables, a floppy disk containing the installation software, and the installation and technical manuals.

Hardware Installation

The first step in the Mini-Winnie installation is to take the cover off your computer and locate the Z80 chip (the main processor chip that's the brains of your computer).

If your Z80 is socketed (i.e., is plugged into a socket, which is in turn soldered to the main circuit board) as it is in early Morrows and all Kaypros, you're in business. Carefully pry the Z80 out of its socket, plug the Z80 into the hard disk controller board, and then plug the controller board into the now-empty Z80 socket on the main circuit board. The kit includes an extension cable so that you don't have to mount the controller board right over the socket if space is tight.

If your Z80 is soldered directly to the main circuit board, as it is in later Morrows and some other computers, you have a problem. The solution is to unsolder the Z80 from the main circuit board, solder a socket in its place, and then proceed as above.

If you're not comfortable working on circuit boards with a soldering iron, bribe someone who is to do it for you. The job is easy for someone who's soldered on circuit boards before, but it's definitely not the way to begin your soldering career. (Advanced Concepts will do it for you cheaply, but you have to pay for shipping your computer both ways, which is expensive.)

Once you've got the controller board plugged into its socket, feed the attached cable out the back of your computer, put the cover back on, and plug the cables from the controller board into the hard disk. That's the end of the hardware work.

How tough the hardware installation will be depends on how accessible your main circuit board and Z80 chip are and whether your Z80 is socketed or soldered. On Kaypros, installation is easy because the circuit board sits right on top once you've taken the cover off. On Morrows, it's a little more difficult because the circuit board is on the bottom, under the floppy disk drives.

On my Morrow MD3 (Revision 1), I removed the

Ted Silveira is a freelance technical writer and contributing editor for Profiles and Computer Currents.

floppy disk drives (three screws, four cables) to make the job easier, although I probably could have managed with them still in place. On a Morrow MD2 with side-by-side drives, you'll definitely have to take at least one drive out.

Other computers may present special problems, but generally you shouldn't have to do more than move the floppy disk drives.

Software Installation

The software installation is all menu-driven—you just answer the questions. Some questions are technical, and the manual isn't as clear as it needs to be, but most people on most computers will get the proper installation by simply selecting the default responses.

To make room for the software to run the hard disk, you must make your CP/M system memory smaller by 2K. For a normal installation, you put a copy of the CP/M utility MOVCPM.COM on the installation disk, and the installation program does the work for you. If you want a special installation—as I did because I wanted to install ZCPR3—you create the smaller CP/M system yourself with MOVCPM, modify it as you wish (i.e., install ZCPR3 or whatever), and then put the modified system on the installation disk.

When it's time to format the new hard disk, the installation program asks you to select the interleave factor for the hard disk. The documentation includes an explanation of what the interleave factor is and how to experiment so that you can find the best interleave for your particular computer; but again, most people can select the default response without knowing a thing about interleave.

Finally, the installation program asks if you want to specify a command that will be run every time you cold start the computer. (I set it to run my ZCPR3 startup command.)

Once you've answered all its questions, the installation program creates HARD.COM and HDDIAG.COM. HDDIAG is for checking your hard disk, and you won't need it very often.

HARD is the program you must run to let your computer know that there's a hard disk attached. In other words, you can't cold start from the hard disk—you have to start from a floppy and run HARD (but warm boots, like ^C, run from the hard disk). The whole cold start loading process takes only a few seconds, so it doesn't even rate as a minor inconvenience.

Compatibility, Documentation, and Support

When you start adding enhancements to your old CP/M computer, you always have to worry about

compatibility—will everything work together? The hard disks and RAM disks from WestWind Computer, for example, are incompatible with ZCPR3.

Fortunately, the Advanced Concepts Mini-Winnie seems to be very compatible and easy-going. It works fine with ZCPR3 (I have it running right now). It works with all the various Kaypro modifications that Advanced Concepts knows about, including PluPerfect's CP/M 2.2E and various Kaypro RAM disks. It also reportedly works with the SWP Co-Power RAM disk on the Morrow and other computers.

The documentation, unfortunately, is a weak point. The installation manual I got was outdated—the new version hadn't been printed yet—and skimpy in places and was missing some information that real novices would need (such as how you tell which end of the Z80 chip goes where). The installation itself is easy but let's hope the new documentation is more complete.

(All times in seconds)

	<u>PIP w/o verify</u>	<u>PIP with verify</u>
floppy disk to floppy disk	76	128
hard disk to floppy disk	59	120
floppy disk to hard disk	35	63
hard disk to hard disk	18	47

Table 1

As if to make up for the poor documentation, though, Advanced Concepts gives excellent support. Tony Nicotra of Advanced Concepts has spent many hours on the phone (and at the keyboard) solving problems for various users, and the Mini-Winnie comes with a 30-day money-back guarantee.

Performance

I expected a performance increase when I installed the hard disk drive, and I got it. Everything—WordStar, dBase, NSweep, and so on—was noticeably faster in operations that involved reading from and writing to the disk. The most improvement, according to Advanced Concepts, comes in functions that write to the disk (like saving a WordStar file), while functions that read from the disk show less.

To back up my own impression that things were working faster, I ran a simple test—copying a large file (160K) from floppy disk to floppy disk, from hard disk to floppy disk, from floppy disk to hard disk, and from hard disk to hard disk. I used PIP to do the copying and made

two runs in each direction, one using PIP's verification option ([V]) and one not. These tests were made with a very full and undoubtedly fragmented hard disk, so they show only relative (not optimum) speed.

The results, shown in Table 1, speak for themselves—it takes roughly one-fourth the time to copy a 160K file from hard disk to hard disk as it does to copy it from floppy disk to floppy disk.

Notice two other things about these figures. First, the times with verification are much longer than those without because the verification process involves extra disk reads. Second, the time to copy from floppy to hard disk is much less than the time to copy from hard disk to floppy. You gain a little speed when you read from a hard disk but you gain a lot when you write to the hard disk.

Convenience

I was surprised how much difference the convenience of the hard disk makes in my work. It's a real luxury having all my programs and files available all the time—no more floppy shuffle!

I'm also making much more efficient use of my disk space, since I need only one copy of most programs instead of several copies on different disks (I don't want to think how many copies of SD and NSWP I have floating around on various floppy disks).

And the hard disk also makes it practical for me to work with larger files. With WordStar on the hard disk, for example, I can comfortably work with longer files than I could on a floppy disk, because WordStar's reading, scrolling, and saving are faster.

Most of all, I feel I've gained a lot of what computer magazines call productivity. First, I can get out of one program and into another much more quickly, so I spend more time working and less hassling with the computer itself. And second, because everything is so easily available, I do things I might otherwise avoid. With the hard disk, I have no hesitation about exiting WordStar, calling up my text database, and searching out some reference I made six months ago. With floppy disks, I'd be reluctant to go through all that disk shuffling. For anyone who changes programs often, a hard disk is wonderful.

In all, the big increase in disk space turned out to be just as important as the increase in speed, more so in some cases.

Hard Disk Drawbacks

A hard disk has drawbacks though. First of all, it's a mechanical device, with parts moving at high speed (3,600 revolutions per minute), so it can break down. And when a hard disk breaks down—physically fails rather than just

generating a bad sector or two—you generally lose everything on it and are faced with the prospect of expensive repairs or (with today's prices) buying a new drive. Because a hard disk failure can wipe out so many files in an instant, it's absolutely crucial that you always keep current back-ups of everything on your hard disk. No exceptions.

Second, hard disks add noise, both from the disk itself and from the accompanying fan. Some people don't seem to mind these noises, but they bother me, perhaps because I work in a quiet room and spend a lot of time just staring at the screen. I even used to turn my electric typewriter off so it wouldn't hum at me while I was thinking.

Fortunately, the Mini-Winnie (at least the one I have) isn't loud as hard disks go. One advantage of an external installation is that I can put the case containing the drive and fan on a shelf under my desk, which muffles the noise. As a result, I hear only a fairly innocuous fan noise, which I can ignore most of the time. It's certainly much quieter than the IBM clone I have next to it, which sounds like a vacuum cleaner.

Final Evaluation

Overall, I'm very pleased with the Mini-Winnie. I think the hard disk gives me a big boost in speed, convenience, and productivity—more than I expected. The kit is a high-quality piece of work, the installation is relatively easy, and though the documentation I got is weak (I haven't seen the new documentation yet), the support from Advanced Concepts is excellent. Best of all, I think the price is right, considering that it includes the drive, the case and power supply, the controller board, and the software. It's not as dirt cheap as hard disks for IBM clones, but I don't think CP/M hard disks ever will be, and the Mini-Winnie is as cheap a package as I've seen.

It's a great way to extend the power and the working life of your CP/M computer. (And let me tell you about running ZCPR3 on the hard disk...) ■

Patch *from p. 20*

and you would patch either 61 or 6D in at address 06EE, replacing the 00 that was there.

Now, about the bottom half of the table. Like WordStar, NewWord does funny things with the "eighth bit." The practical effect of this is that any ASCII character may be represented in the computer's memory by two different symbols; it's as if the ASCII character set were increased from 128 to 256 characters, with the second half an exact duplicate of the first. So, the second half of the table is a duplicate of the first: Whatever you patch in for the first eight lines, just repeat it for the next eight lines. ■

Desktop *from p. 24*

I was introduced to two items that have made cut-and-paste possible for me to do all by myself: Glue Stick and C-Thru Ruler are undoubtedly just as valuable as my Morrow.

Lay the ruler at the top of your make-up page and line up the edge of the paper with a line on the ruler. Slide your cut manuscript under the ruler and line up the top line of print with a line on the ruler, making sure nothing slips. While holding it all down with your thumb, fold the bottom half over and use the glue stick to paste the edges. (I'm sure you'll notice the need to place a back-up sheet under it while you spread the paste, but just in case you don't...) Fold it back down and press lightly against the edge to seal it.

If you rub it, you will probably smear the ink or carbon, so it might be good to lay a separate piece of paper on top and rub on top of it until all the edges are smooth. Remove the ruler and repeat for the top half and your page is complete. Repeat for all pages, and your master is finished!

Notice the margins as you paste up each page. You may have trouble getting them to match up perfectly when you copy it. Remember that many photocopy machines have a

built-in 98 percent copy factor, which means that the copies are automatically reduced by two percent to make the margin edges come out better. You may need to experiment a little to find a good combination for you and the photocopy machine you are using.

I have shown you the process for making a 4-page 5-1/2 by 8-1/2 inch bulletin. But with a little imagination, you will see the possibilities for any number of other alternatives made out of regular letter- or legal-sized paper. Fold the paper twice instead of once and you have a three-sided, fold-out brochure. Tear it in half and you have trash. Use your own imagination and see what you come up with.

Desktop publishing isn't so hard that you can't have the same near-professional results that many are touting on the new systems. In fact, since you are using a daisy-wheel printer, yours could very well look even better. Enjoy the power you already have and don't be too green with envy over the new systems. If the temptation gets too bad, remember what you paid for your Morrow and what they have to pay for their "leading edge" technology! Happy publishing. ■

Z *from p. 43*

moment you're running CP/M; you put in the disk, hit the reset button, sit back and watch an auto-execute file perform its magic for a couple of minutes, and, when it's finished, you're running a new operating system. It's that simple. Number two: Remember, the non-commercial version is ZCPR3 but not Z-System. You have no ZRDOS. ZRDOS gives you the ability to log onto new disks without hitting ^C (something I've always envied in MS-DOS), a feature called "public directories" that lets you access programs, such as WordStar, that have overlays from any user area, and a growing number of utilities that must have ZRDOS to run. Most importantly, the non-commercial version is set up for a floppy-based machine and is not configured for the new memory addresses used when a hard disk is attached to the system; so if you're connected to a hard disk, the Morrow bootable disk will be indis-

pensable. Lastly, the bootable disk has space allocated for something called Input/Output packages, programs such as key-redefinition programs and print spoolers. For those wanting a minimum of hassle with installation and configuration, the Morrow bootable disk will be an excellent choice.

One additional aspect of Z-System bears mentioning: It causes me great sadness to say this, but all appearances point to the fact that the CP/M public domain is coming to a slow but firm resting point. Most of what one now sees are minor revisions to already-existing programs. Having a sense that the operating system one uses is a vital, dynamic and growing entity is an important feeling for us computer users. It helps us feel connected to something present, something alive. But the bulletin boards devoted to Z-System, called Z-Nodes, of which there is a large national network, are bursting to the seams with activity. It

seems that many of the old CP/M programmers are taking advantage of this new environment and writing in new ways. Echelon Inc. is also now engaged in developing a multi-tasking Z-System, something that to my knowledge has never previously been implemented on CP/M-compatible systems.

A printed newsletter, *Z-NEWS*, is published biweekly to keep users abreast of the latest developments, both in the software and hardware worlds. This adds to the feeling—very important to me—that one is part of a community.

I would encourage anyone eager to enhance and modernize his/her computing to try Z-System on the Mini-Winnie hard disk. Z-System is a continuously evolving, ever-changing, organic entity, one that has given me much pleasure. Its rewards are tremendous and promise to be so for many years to come. ■

Back Up *from p. 22*

sequence. At the A>, type:

A>SUBMIT C TEST<RETURN>

SUBMIT tells the computer that you want to run a SUBMIT program. This is just like typing WS to get WordStar—you leave off the .COM.

C tells the computer *which* SUBMIT program to run, the one that will make back-ups. SUBMIT knows to look for a file with a .SUB ending, so you don't have to type it here either. If you name your SUBMIT file BACK.SUB instead of C.SUB, type BACK here.

TEST tells the computer what the *variable* ought to be. When the SUBMIT program runs and encounters that ugly \$1, it turns that variable into TEST, so that the line would read PIP C:=B:TEST, and the file you want copied gets copied.

(Note: You can change the name SUBMIT.COM to S.COM, which requires less typing: S C TEST.)

After typing this line, the drives start their usual grinding. You'll see B:ERA *.BAK on the screen. Then

you'll see B:STAT *.* on the screen, followed by a list of your files and how much space remains on your disk. Then you'll get the message that your A drive is being reassigned as the C drive. All you need to do is take out the WordStar disk, put in your *already-formatted* back-up disk, and hit return. When the copy is made, exchange the disks again, hit return, and you'll see WordStar being loaded again. Every time you edit your document, you can use submit to copy the latest version.

Once you start making back-up disks, you might consider other useful SUBMIT programs. I have one that loads WordStar onto the B drive when I boot up. I used AUTO.COM to run the SUBMIT program, called A.SUB, as the first thing that happens. A.SUB loads SmartKey II, then baZic. I run a calendar program that I wrote, and when I'm through with the program and leave baZic, SUBMIT takes over again and loads WordStar. I hope you'll experiment with SUBMIT. It can make using the computer a lot simpler. ■

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Two Column *from p. 29*

column text, WordStar prints column 1, line 1; column 2, line 1; column 1, line 2; column 2, line 2; and so on. If underline or boldface is turned on at any point and is still on at the end of the line (in either column), wholly unrelated text will be underlined or boldfaced in the other column.

This technique, in my opinion, is much more elegant than any of the three methods described in the article, "Desktop Publishing with a Morrow," in *MOR* Vol. 3, #2, p. 7. Two of the methods mentioned in that article fail to take full advantage of word processing with the Morrow or any other computer; the third one requires the printer to roll the paper back at the end of each column except the last one on a page. This might cause a printer jam, depending on the paper path and the amount of space behind the printer. ■

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MOR is still looking for new writers. If you have an idea for an article you'd like to write, please send a query letter and one or two writing samples (unpublished articles are fine) to Marilyn Werden, Managing Editor, *Morrow Owners' Review*, P.O. Box 5487, Berkeley, CA 94705. Authors of published articles of 1,000 words or more receive a free one-year's subscription. ■

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Tyros *from p. 10*

CCP, it makes CP/M load up a bunch of information about the current disk so that it can operate on that disk ("logging onto a disk") and initializes some internal parameters.

The BDOS is the heart of CP/M. It is the guy who handles the interfaces between the programs (including the CCP) and the rest of the system. It takes care of file organization on the disks, input and output to the various peripherals, and so forth. The interesting question here is, how can it do all this stuff if it doesn't know anything about the hardware except that the CPU is an 8080 (or compatible CPU like the Z80 in our MDs)? Well, it sets up a kind of imaginary computer that does all of its talking with the BIOS. This imaginary computer thinks that all its disk drives have 128-byte sectors (remember that the MDs have 1K sectors), that all I/O devices are parallel, and so forth. It then becomes the job of the BIOS to translate these interfaces to the real world.

The BIOS is usually written by the manufacturer to interface his actual hardware to the BDOS. You should have gotten a file called CBIOS.MAC on your distribution disks from Morrow. This is the BIOS that Morrow wrote.

The general rule is that programs should talk only to the BDOS. The only guy to talk to the BIOS should be the BDOS. If these rules are followed, then the program should be truly "portable." There are exceptions, although I don't think there really should be. Two wide-spread programs that do use BIOS calls are MEX and Turbo PASCAL. I haven't really looked into why the Morrow overlay for MEX uses a BIOS call, but it may have to do with the way Morrow wrote their BIOS; and if that is so, shame on Morrow. I really don't know why the Borland people used BIOS calls in Turbo PASCAL. I've asked them and have never gotten a satisfactory answer. It leads to problems in Turbo PASCAL programs in that output to the console can outrun the capability of the console to display the output, and strange things happen on the screen.

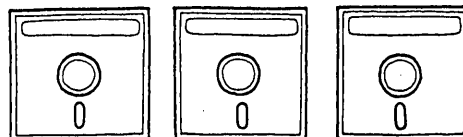
There is one case where it is proper to use the BIOS directly. That is when the BIOS writer has put in some extras. Morrow has done that to gain software access to the disk controller. The problem of different disk formats has been nicely avoided by Morrow, which had the foresight to make it possible to reconfigure the disk drives from software to emulate different disk formats by way of the "FOREIGN.COM" program. Some commercial programs (MULTIFORM and UNIFORM to name a couple) have extended this capability to upwards of 70 different formats.

The bottom line is that programs written *properly* to run under CP/M are not machine-specific except for the actual disk format. A good CP/M program will run on a Kaypro, Osborne or Morrow with no problems once it is in memory.

Next time we'll talk a little more about FORMAT, SYSGEN and AUTO. Also, since I have received my MD5 and am having gobs of fun playing with and learning about it, I'll address some of the differences between CP/M 2.2 and CP/M 3.0 that I have missed in my previous columns. You people who have written me with MD-HD questions, I have not forgotten you. I'm simply waiting until I know enough to give you reasonable answers. Keep those cards and letters coming. ■

Self-Installing Morrow ZCPR3

Dave McCord has borrowed an MD3 from MOR to develop the MOR ZCPR3 kit that was announced in the last issue. The \$59.95 package will be ready for delivery just about the time you read this. For more timely information, call the MOR PBBS and read the NEWS files. Orders will be processed in the order in which they are received. ■



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Mailbox *from p. 8*

COPYSYS.COM as OK. The programmer's guide says there is a special type of directory entry called an SFCB to record date and time stamps that reside in every fourth position of the directory. Am I right that VERIFILE.COM doesn't understand how to handle a disk that has been converted to time-stamping mode? If so, are there any utilities out there that carry out the function of VERIFILE for a time-stamped disk?"

Here's a MailMerge tip, thanks to a problem sent in by **Bradley H. Kline of Franklin Park, NJ**. His problem was that MailMerge letters would come out with the data in the wrong variables, "apparently in random order." He sent a sample of his data file that looked sort of like this:

John,Jones,123 4th St.,Orlando, FL 32887,305-555-1212
Mary,Smith,345 6th St.,Ithaca, NY 14850,,

The mistake, for those who haven't caught it, was to insert double commas in place of the missing data item (the phone number) at the end of the second line. The manual isn't clear on this. It tells you to type a comma when a data item is left out, but that comma is just the one that would have been there anyway at the end of the data item; in other words, you replace the data item with the blank space between the two commas. When a data item is omitted at the end of a line, what you should leave is the blank space between the last comma and the carriage return. The thing to remember is that commas and carriage returns work *exactly the same* to separate data items in a file; we generally put one record (a complete name and address, for instance) on one line for convenience, but it doesn't have to be that way. You can keep names and addresses in a data file like this, if you prefer:

Smith,John
123 4th St.

Orlando,FL 32887

You can print out a file like this to give someone a copy without having to write another MailMerge program. MailMerge will treat each whole line as one data item—including the blank line for a second line of address—and will treat the lines with commas as two data items. You can turn "Smith,John" around and space it out by reversing the variables. If you leave a blank line between records, remember to insert a dummy variable in the MailMerge program to read it.

And one more NewWord tip: This once happened to me. After doing some patching with NWINSTAL, I found I

could no longer run a program from the R command of the opening menu. NewWord would respond, "Unable to find NewWord command file to return to." I checked at NWFILE in the patch area, where NW stores its own name, and found it still contained "NW.COM." Still, according to the folks at NewStar, NW was somehow afflicted with amnesia. The solution they suggested was to use the CP/M command REN to rename NW.COM to something else, e.g. NWX.COM, then run NWINSTAL to name it back: When NWINSTAL asks for the name of the file to install, tell it NWX.COM, and for the file to hold installed NewWord, NW.COM. It works. ■

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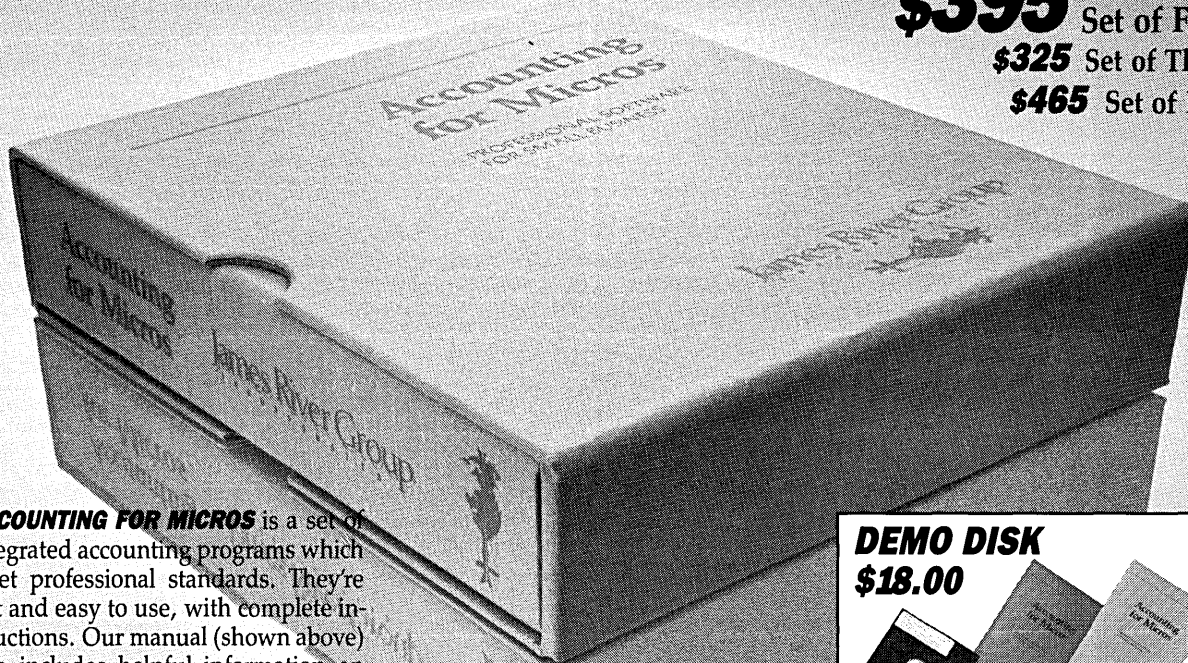
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